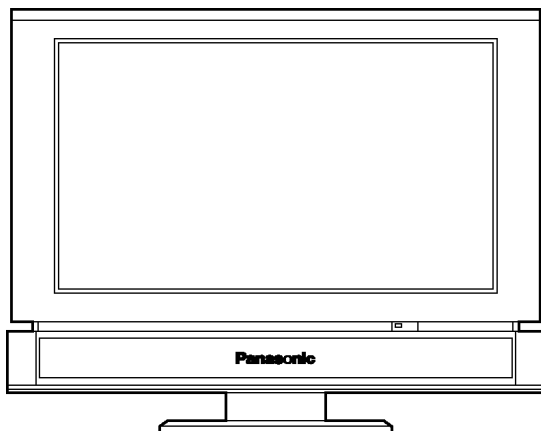


Service Manual

15.2" Diagonal LCD TV



TX-15LT2M
TX-15LT2Q
TX-15LT2Z
TX-15LT2X
TX-15LT2T

LH1 Chassis

Specifications

Power Source

AC 100~240V, 50/60Hz

Power Consumption

Average use: 49W

Stand-by condition: 4W

TV set: DC 15V, 2.8 A max.

LCD

15.2-inch (385mm), 16:9 aspect ratio LCD panel

Screen Size

13.21-inch (335.6mm) (W) x 7.43-inch (188.6mm)(H) x 15.2-inch (385.0mm)(Diagonal)

Sound

Speaker

Tweeter (3 x 4cm 2pcs, 8Ω), Woofer (Ø5cm, 8Ω)

Audio Output

6.5W (2.0W+2.0W+2.5W (Woofer)), 10%THD

Headphones

M3(3.5 mm) Jack x 1 8Ω impedance

FEATURES

Aero-Hammer® Woofer System (2Way 3Speaker System)

Receiving System

17 Systems		Function
1	PAL B, G, H	Reception of broadcast transmissions and Playback from Video Cassette Type Recorders
2	PAL I	
3	PAL D, K	
4	SECAM B, G	
5	SECAM D, K	
6	SECAM K1	
7	NTSC M (NTSC 3.58 / 4.5 MHz)	
8	NTSC 4.43 / 5.5 NHz	Playback from Special VCR's
9	NTSC 4.43 / 6.0 NHz	
10	NTSC 4.43 / 6.5 NHz	
11	NTSC 3.58 / 5.5 NHz	
12	NTSC 3.58 / 6.0 NHz	
13	NTSC 3.58 / 6.5 NHz	
14	SECAM I	Playback from Special Disc Playback and Special VCR's
15	PAL 60 Hz / 5.5 MHz	
16	PAL 60 Hz / 6.0 MHz	
17	PAL 60 Hz / 6.5 MHz	

Receiving Channels

Regular TV

VHF BAND

2-12 (PAL/SECAM B, K1)

0-12 (PAL B AUST.)

1-9 (PAL B N.Z)

1-12 (PAL/SECAM D)

1-12 (NTSC M Japan)

2-13 (NTSC M U.S.A)

UHF BAND

21-69 (PAL G, H, I/SECAM G, K, K1)

28-69 (PAL B AUST.)

13-57 (PAL D, K)

Panasonic®

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13-62 (NTSC M Japan)

14-69 (NTSC M U.S.A)

14-69 (NTSC M U.S.A)

CATV

S1-S20 (OSCAR)

1-125 (U.S.A CATV)

C13-C49 (JAPAN)

S21-S41 (HYPER)

Z1-Z37 (CHINA)

5A, 9A (AUST.)

Aerial-Rear

UHF/VHF

Operating Conditions

Temperature: 5-40°C

Humidity: 5%-90% RH (non-condensing)

Connection Terminals**AV1**

21 Pin socket

(Audio/ Video in, TV out, RGB in)

AV2**VIDEO**

RCA PIN Type x 1

S-VIDEO

Mini DIN 4-pin

AUDIO L-R

RCA PIN Type x 2

AUDIO OUT

3.5mm, Stereo Jack 0.5Vrms

Dimensions (W x H x D)**Including TV Stand**

413mm x 330mm x 180mm

TV Set Only

413mm x 295mm x 73mm

Weight (Mass)

5.6kg Net

Storage Conditions

Temperature: 55°C MAX

Note:

Design and Specifications are subject to change without notice.
Weight and Dimensions shown are approximate.

**WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Safety Precautions

1.1. General Guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

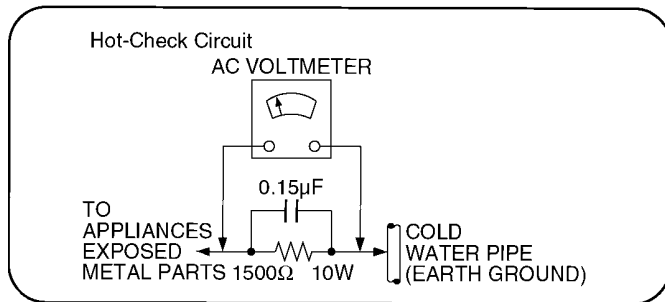


Figure 1

1.1.2. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2 Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by $\triangle$ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

3 About lead free solder (PbF)

Note: Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.

The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).

That is Tin (Sn), Silver (Ag) and (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

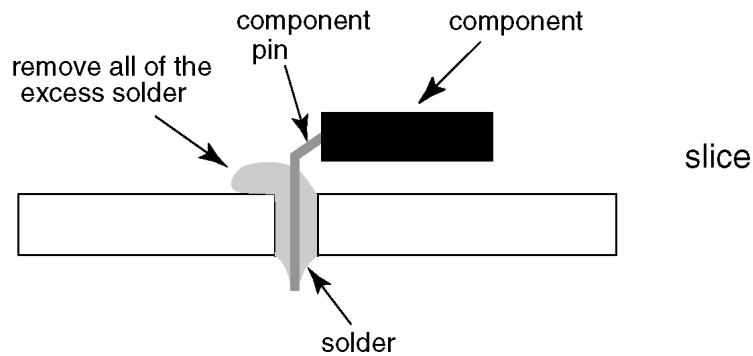
PCBs manufactured using lead free solder will have the PbF within a leaf Symbol  stamped on the back of PCB.

Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).

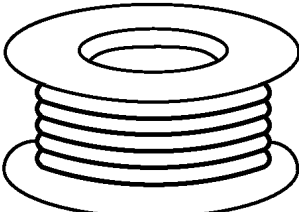
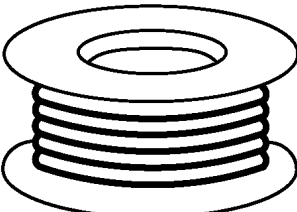
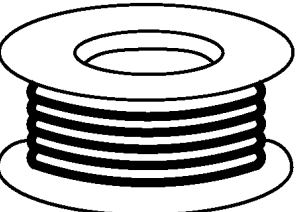
If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



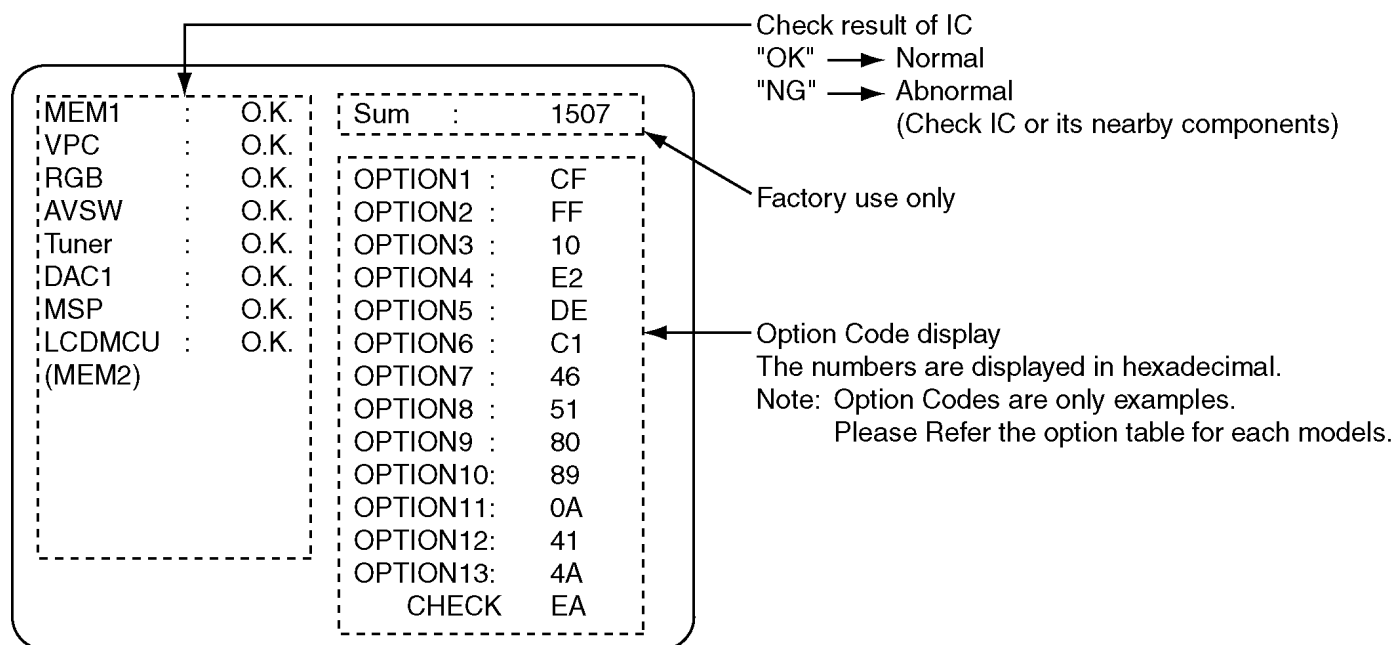
Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

4 Self Check

1. Self-Check is used to automatically check the bus lines and hexadecimal code of the TV set.
2. To get into the Self -Check mode press the [Down (—/√)] button on the customer controls at the front of the set, at the same time pressing the [SET UP] button on the remote control, and the screen will show :



If the CCU ports have been checked and found to be incorrect or not located then "--" will appear in place of "O.K.".

Display	Ref. No.	Description	P.C.B.
MEM1	IC1004	EEPROM	DG-Board
VPC	IC9001	Video Processor	DG-Board
RGB	IC9505	RGB Processor	DG-Board
AVSW	IC4002	AV switch	A-Board
Tuner	TNR001	Tuner	B-Board
DAC1	IC4003	D/A Converter	A-Board
MSP	IC2503	Multi Sound Processor	A-Board
LCDMCU	IC3002	LCD MCU	DG-Board

5 SERVICE HINTS

5.1. Hotel Mode

Purpose

1. At Hotels, this Mode prevent customer from changing the TV preset data, such as Channel preset data.

Note:

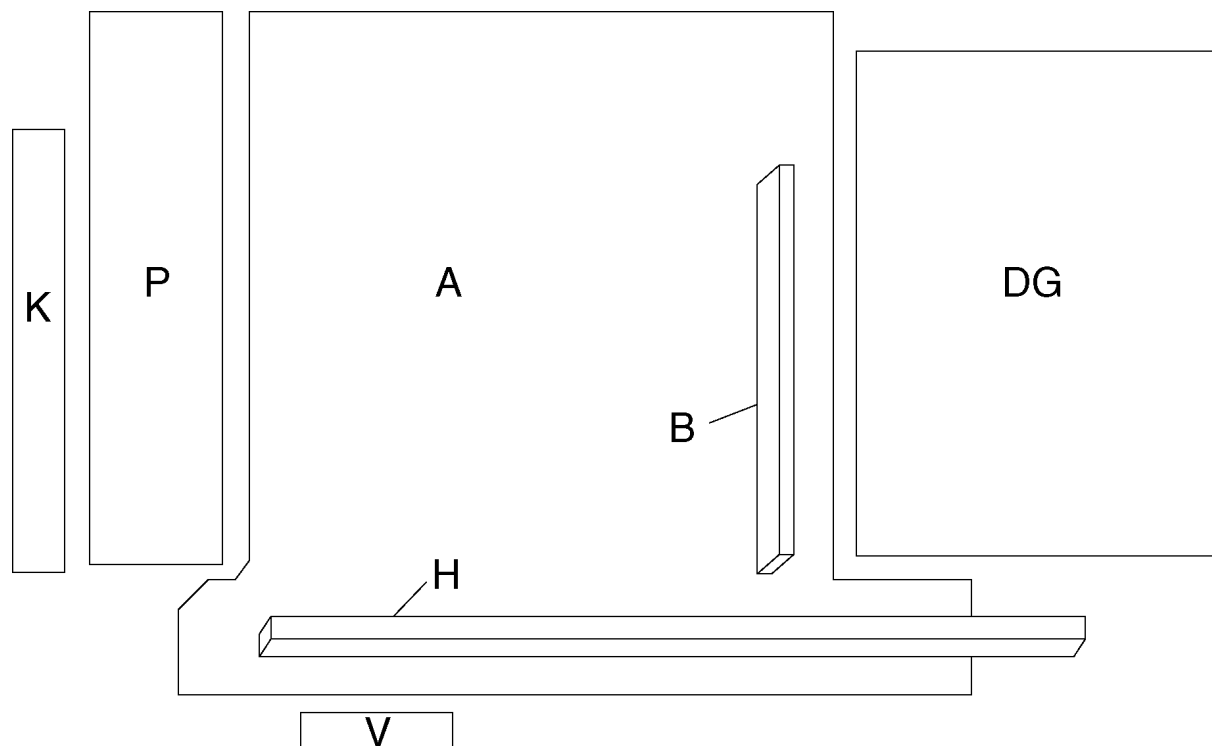
This Mode is useful for hotel, you should not get into "Hotel Mode" with Normal use.

Operation

1. To get into " Hotel Mode", press "Recall" button on the remote control and Channel up "[+ / ^]" key on the TV set simultaneously, after setting the "Off-Timer" mode.
2. In this mode, The Channel up and down Function will be able as normal Mode, and The maximum volume level for this mode is set at the current volume level, that means setting at the level before entering the mode. However, other function will be disable.
3. **To exit This mode**, press "SET UP" button on the remote control and the "Volume Down [—/√]" key on the TV set simultaneously.

* This Information is informed by Service Manual only.

6 Chasis Board Layout

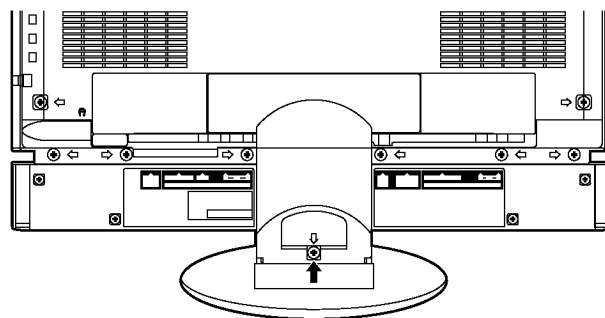


Board Name	Function
A - Board	Main(DC Power Supply,Audio,Micro Processor,Input Select)
B - Board	Tuner
DG - Board	Global Core,VPC,RGB Processor
H - Board	DC Power Jack,AV Connector
K - Board	Switch
P - Board	Inverter
V - Board	Remote Sensor,LED

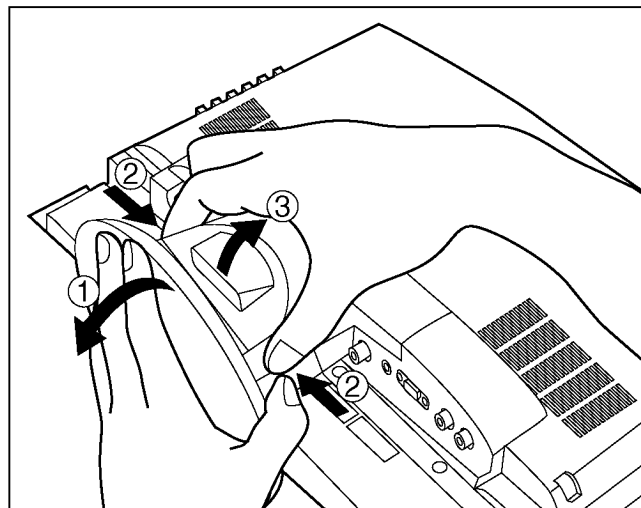
7 Servicing method

7.1. Removing tilt base

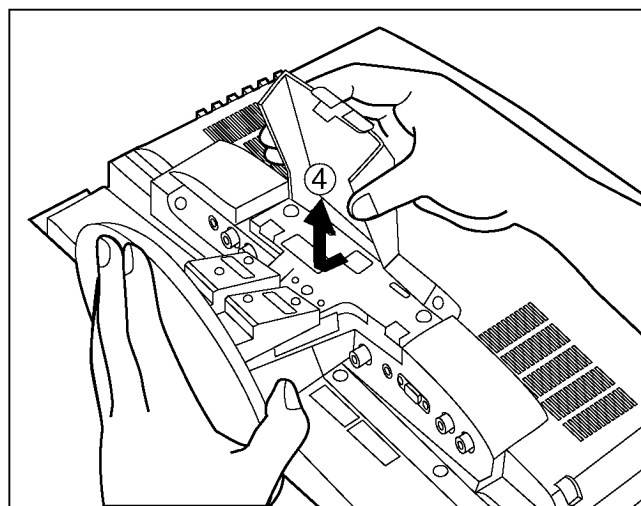
(1) Remove the fixing screw (1pce).



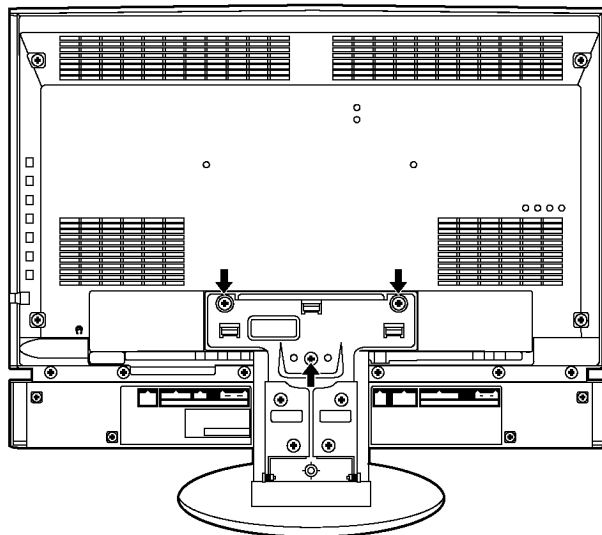
(2) As shown in the figure, slant the tilt base toward (1). While holding lower part of the tilt cover (rear), lift it up in such a way as to turn it with its upper part as a pivot.
* Lay down the LCD panel to face downward.



(3) As shown in the figure, remove the tilt cover (rear) while disengaging the hook on its upper part.

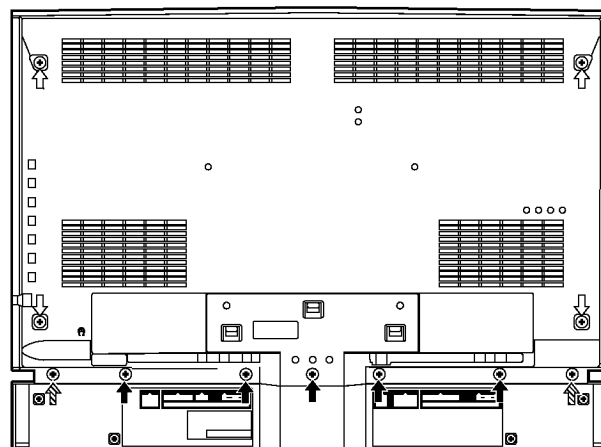


- (4) Remove the fixing screws (3pcs), and detach the tilt base.



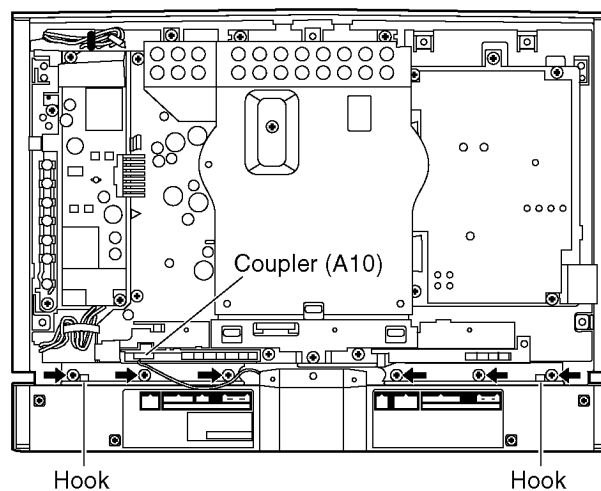
7.2. Removing rear panel

- (1) Remove the tilt base. (See 5.1.)
- (2) Remove the fixing screws (4pcs).
- (3) Remove the fixing screws (2pcs).
- (4) Remove the fixing screws (5pcs).
- (5) Detach the rear panel.



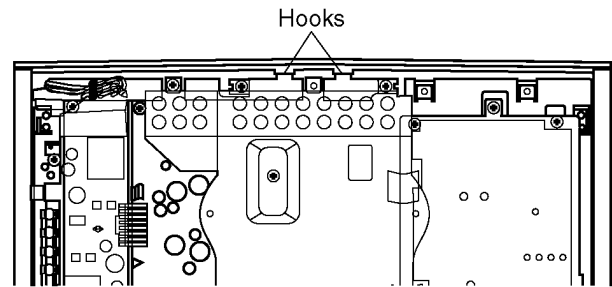
7.3. Removing speaker unit

- (1) Remove the rear panel. (See 5.2.)
- (2) Remove the fixing screws (6pcs).
- (3) Disconnect the coupler (A10).
- (4) Lift the chassis to disengage the hooks (2 locations), and remove the speaker unit.



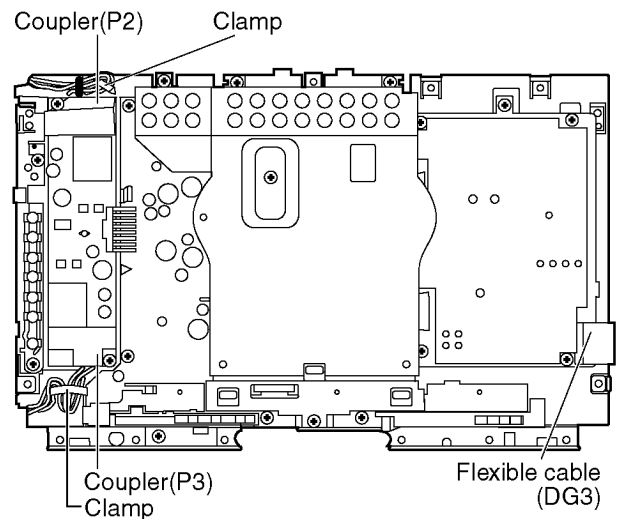
7.4. Removing front panel

- (1) Remove the speaker unit. (See 5.3.)
 - (2) Remove the chassis and the LCD panel while disengaging the hooks (2 locations).
(The front panel remains.)
- * Be careful not to mar the LCD panel.



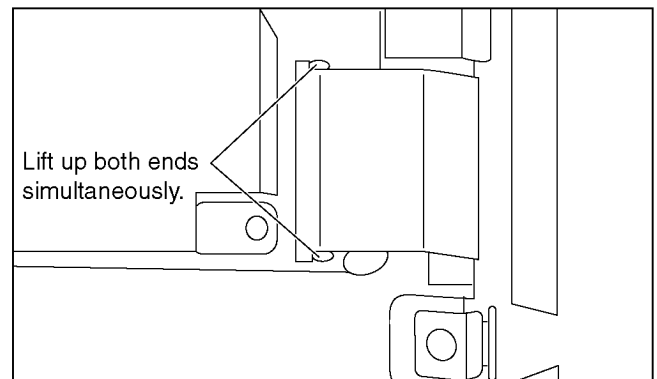
7.5. Removing LCD panel

- (1) Remove the chassis and the LCD panel. (See 5.4.)
 - (2) Disconnect the couplers (2 locations) and the flexible cable.
- * When disconnecting the flexible cable from the LCD panel, see the information below for your reference.
- * Disconnect the coupler cable from the clamp (2 locations).
- (3) Remove the chassis. (The LCD panel remains.)



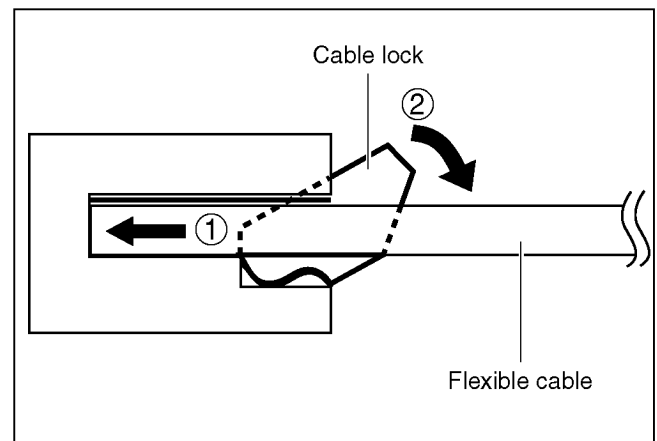
* Reference

To release the cable lock (brown colored) of the coupler, lift its both ends simultaneously. (Once DG3 flexible cable is disconnected, the cable lock tends to detach from the coupler easily. Due precaution should be paid on it.)



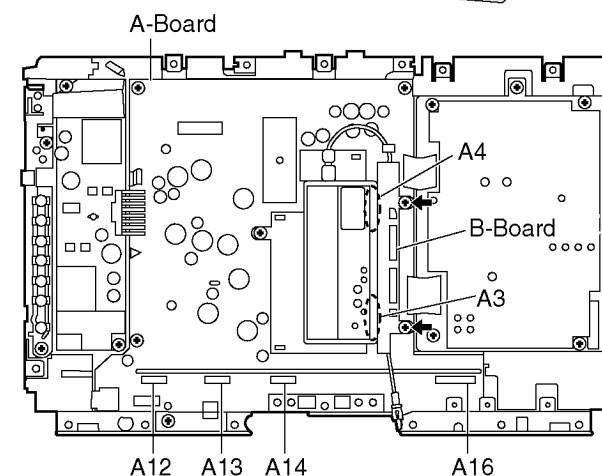
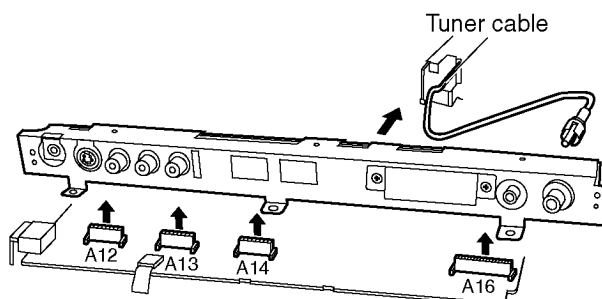
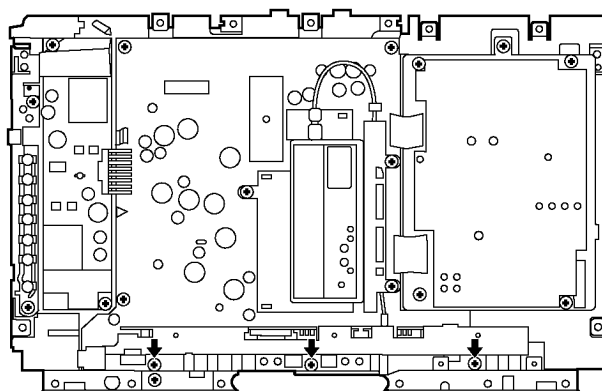
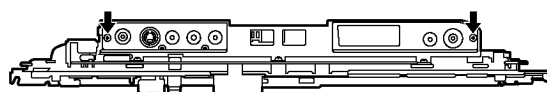
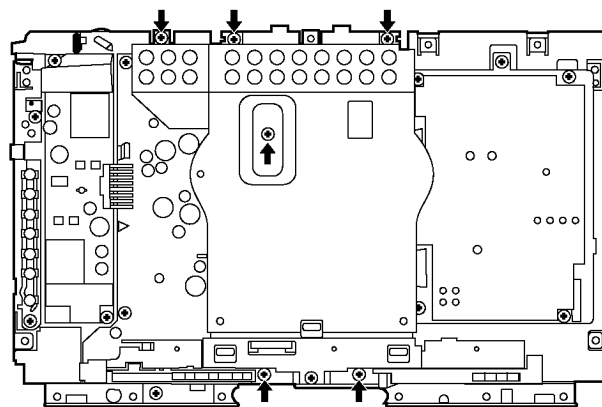
* Reference

When connecting the flexible cable to the coupler, mount the cable lock on the coupler and insert the cable into the coupler over the cable lock. Then push down both ends of the cable lock until its upper face is positioned flat to lock the cable.

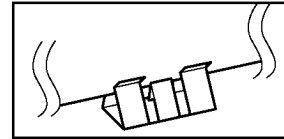
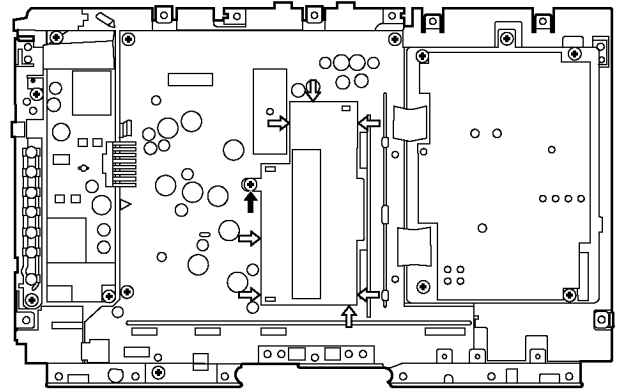


7.6. Removing main A-Board

- (1) Remove the chassis. (See 5.5.)
- (2) Remove the fixing screws (6pcs), and detach the main shield.
- (3) Remove the fixing screw (1pce each for right and left), and dismount the terminal covers (both right and left).
- (4) Remove the fixing screws (3pcs).
- (5) Lift the terminal block to remove while disconnecting the couplers (A12, A13, A14 and A16) between the terminal block and the A-Board.
* Caution: Do not apply excessive force when disconnecting the couplers to prevent damage to the PCB.
- (6) Disconnect the cable tied to the antenna terminal (rear side) of the terminal block, and remove the terminal block.
- (7) Remove the fixing screws (2pcs). Disconnect the couplers (A3 and A4) between B-Board and the main A-Board. Then dismount the B-Board (with tuner assembly) from the A-Board.
* Caution: Do not apply excessive force when disconnecting the couplers to prevent damage to the PCB.

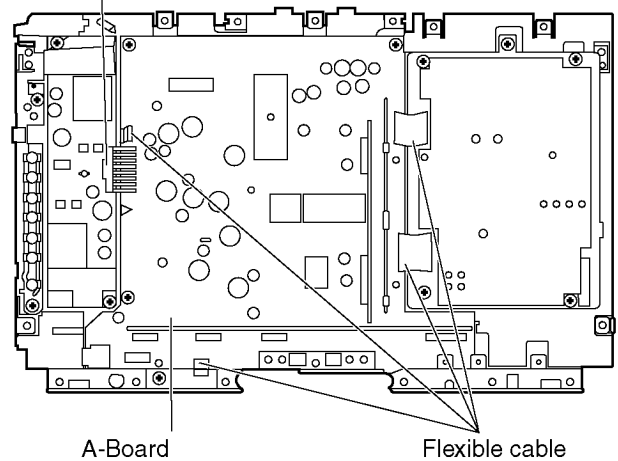


- (8) Remove the fixing screw (1pce). Detach the shield while disengaging the shield clips (7 locations).



- (9) Lift up the coupler (A5) by holding its projection to remove it (from P1).
- (10) Disconnect the flexible cables (4 locations).
 * When disconnecting, pull out the cable straight (at right angle to the coupler).

Coupler (A5/P1)

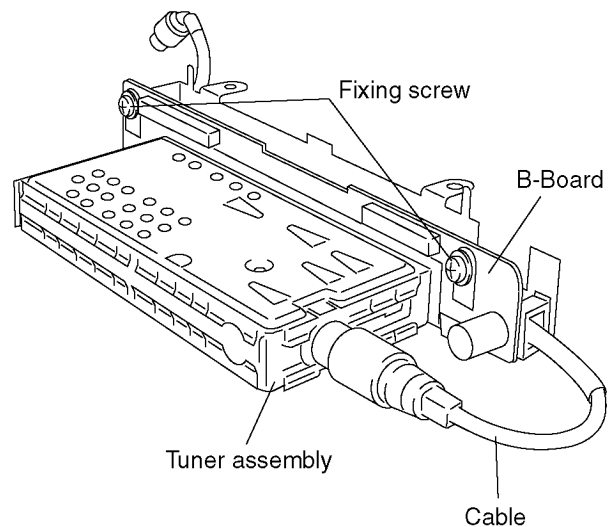


A-Board

Flexible cable

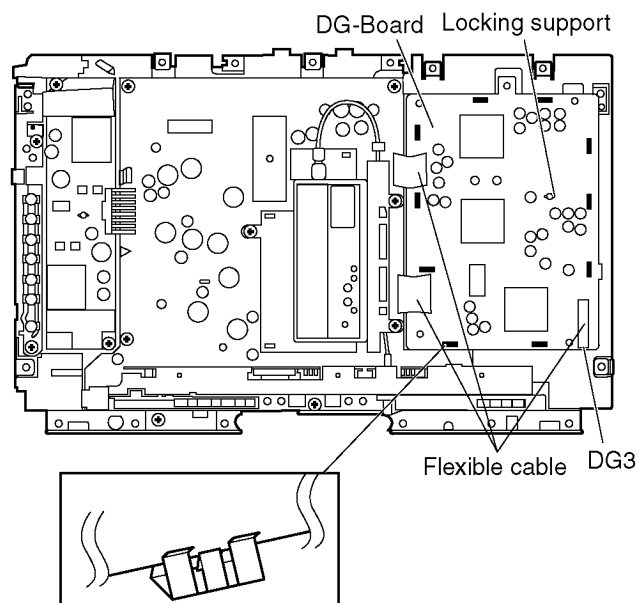
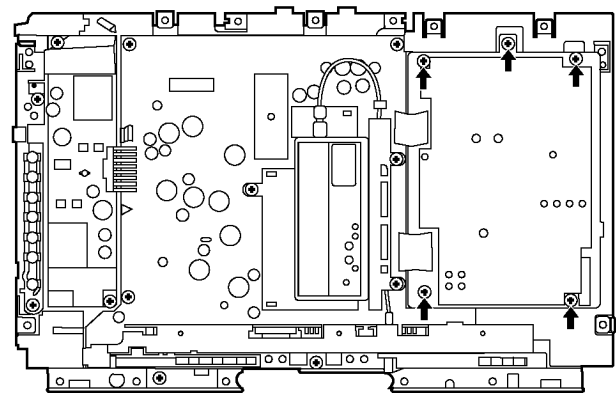
7.7. Removing B-Board (with tuner assembly)

- (1) Disconnect the B-Board (with tuner assembly) with metal fitting. (See 5.6. procedures 1-2 and 6-7.)
- (2) Remove the fixing screws (2pcs), and separate the B-Board (with tuner assembly).



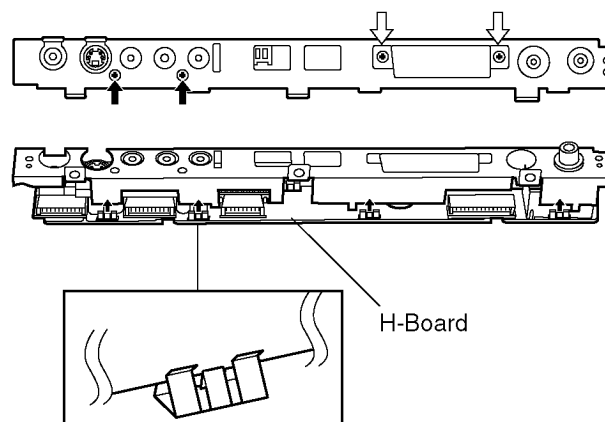
7.8. Removing DG-Board

- (1) Remove the rear panel. (See 5.2.)
- (2) Detach the main shield. (See 5.6. procedure 2.)
- (3) Remove the fixing screws (5pcs), and release the shield case stoppers at 10 locations to detach the shield.
 - * When mounting, insert it matching the projection for positioning.
 - * The illustration shows the state after chassis removal.
- (4) Remove the flexible cables (3 locations).
 - * As the illustration shows the state after chassis removal, the flexible cable from the LCD panel is already disconnected.
 - When disconnecting or reconnecting the flexible cable (DG3), see the reference in 5.5.
 - When disconnecting the flexible cable from the A-Board PCB or reconnecting to it, pull out or insert the cable straight (at right angle) to the coupler.
- (5) Unlock the locking support and remove the DG-Board.



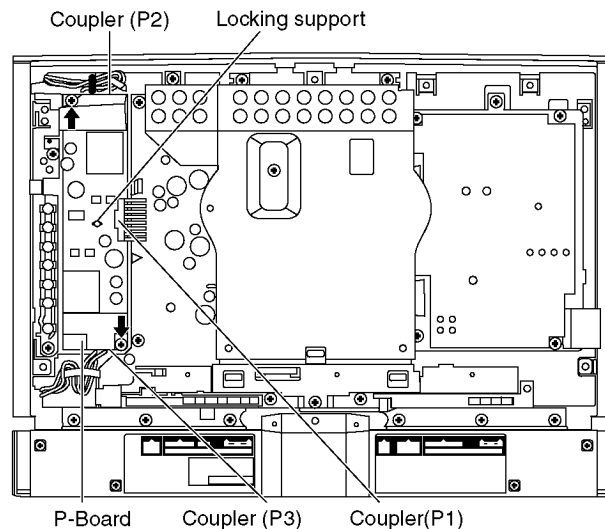
7.9. Removing H-Board

- (1) Remove the terminal block. (See 5.6. procedures 1-6.)
- (2) Remove the fixing screws (4pcs) and dismount H-Board.
 - * When mounting, match the terminal block metal fitting and the PCB shield clips (6 locations).



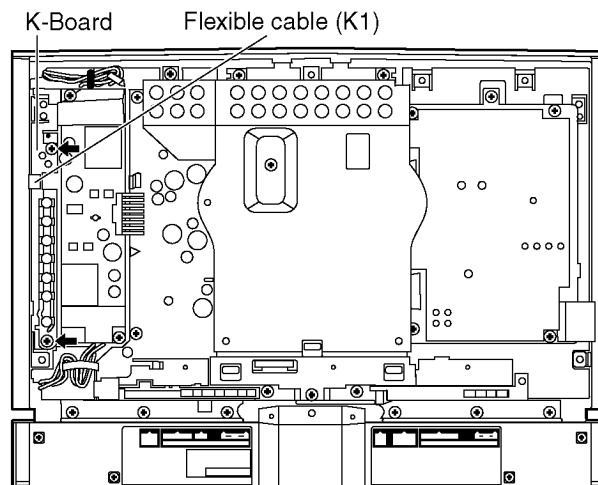
7.10. Removing P-Board

- (1) Remove the rear panel. (See 5.2.)
- (2) Disconnect the couplers (P2, P3 and P1).
- (3) Remove the fixing screws (2pcs).
- (4) Unlock the locking support and dismount P-Board.



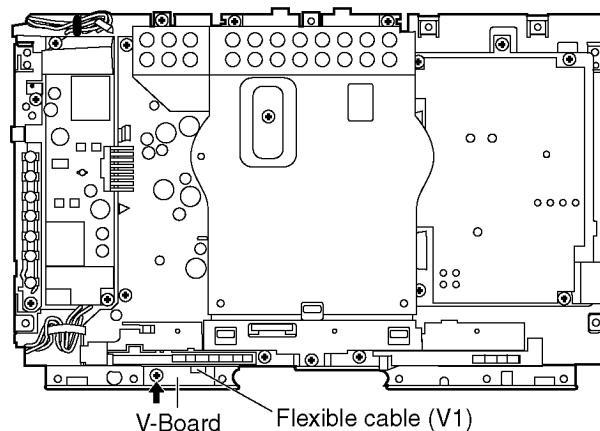
7.11. Removing K-Board

- (1) Remove the rear panel. (See 5.2.)
- (2) Remove the fixing screws (2pcs).
- (3) Disconnect the flexible cable (1 location) and dismount K-Board.
* Pull out the flexible cable straight to the coupler.



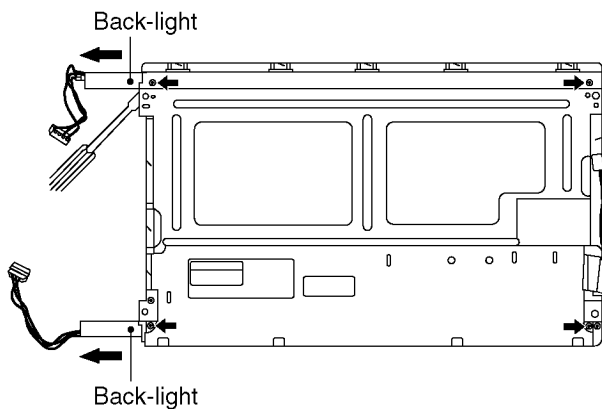
7.12. Pull out the flexible cable straight to the coupler.

- (1) Remove the rear panel. (See 5.2.)
- (2) Remove the fixing screw (1pce).
* The illustration shows the state after chassis removal.
- (3) Remove the chassis. (The LCD panel remains.)
* Pull out the flexible cable straight to the coupler.



7.13. Removing back-light

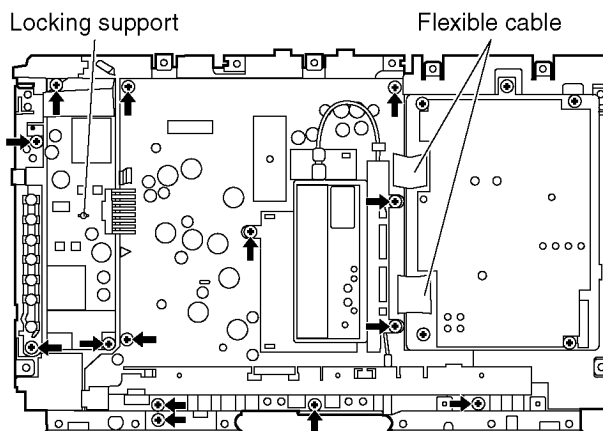
- (1) Remove the LCD panel. (See 5.5.)
 - (2) Remove the fixing screws (4pcs).
 - (3) While lifting upper (or lower) part of the shield a little with a screwdriver, pull out the back-light slowly.
- * When replacing the back-light, make sure to replace both upper and lower back-lights same time.



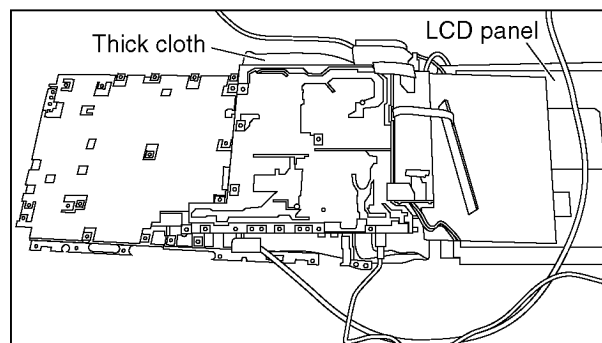
7.14. A-Board servicing

* Follow the procedures described below when checking voltage on rear side of the A-Board.

- (1) Remove the chassis, the main shield and the terminal covers (right and left). (See 5.1 ~ 5.6. procedure 3.)



- (2) Remove the fixing screws (14pcs).
- (3) Unlock the locking support.
- (4) Disconnect the flexible cable (2 locations) between the A-Board and the digital module.
* When disconnecting, pull out the cable straight (at right angle to the coupler).
- (5) Cover the digital module with thick cloth for insulation and protection, and lay the A-Board and other PCBs upside down.
- (6) Connect the A-Board and the DG-Board with flexible cable.
- (7) Connect P2/P3 connectors from the LCD panel (back light) to P1-Board.



8 Service Mode Function

MPU controls the functions switching for each IICs through IIC bus in this chassis. The following setting and adjustment can be adjusted by remote control in Service Mode.

8.1. How to enter SERVICE 1

1. In sound menu, set BASS to MAXIMUM, and set TREBLE to MINIMUM.
2. Simultaneously press **INDEX** button on remote control and **DOWN** button [] on the TV set.

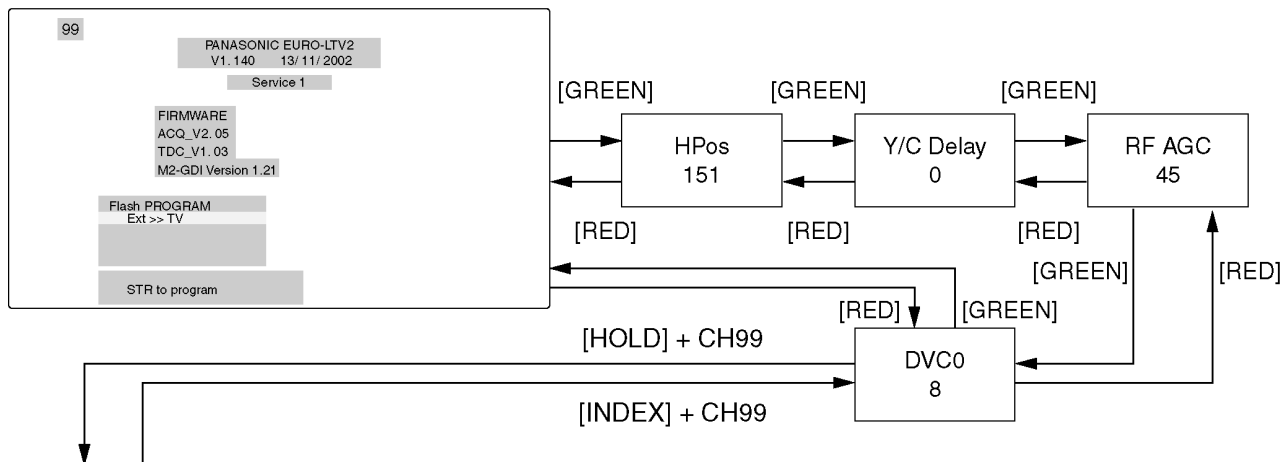
8.2. How to enter SERVICE 2

1. Set the channel to CH99.
2. Press HOLD button on remote control.

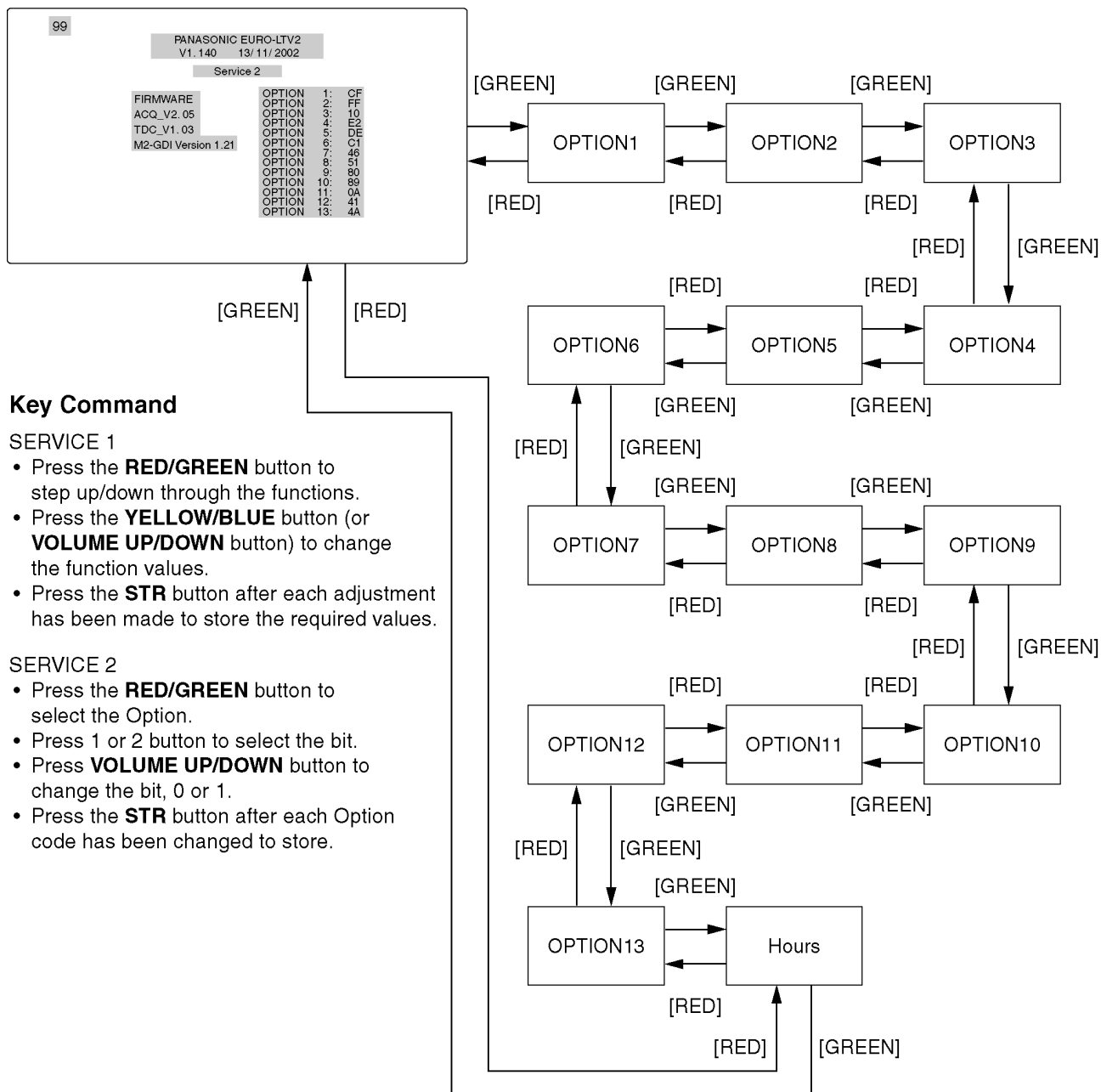
Note:

To exit to Service mode, press N or Power button on remote control.

SERVICE 1



SERVICE 2



Key Command

SERVICE 1

- Press the **RED/GREEN** button to step up/down through the functions.
- Press the **YELLOW/BLUE** button (or **VOLUME UP/DOWN** button) to change the function values.
- Press the **STR** button after each adjustment has been made to store the required values.

SERVICE 2

- Press the **RED/GREEN** button to select the Option.
- Press 1 or 2 button to select the bit.
- Press **VOLUME UP/DOWN** button to change the bit, 0 or 1.
- Press the **STR** button after each Option code has been changed to store.

8.3. Option Description

Option Models		M	Q	Z	X	T	Description	
option1		CF						
	b0		1				Colour system	Auto(1)
	b1		1					SECAM(1)
	b2		1					NTSC(1)
	b3		1					M.NTSC(1)
	b4		0				TV NTSC 50	Reserved
	b5		0				TV SECAM 60	Reserved
	b6		1				AV NTSC 50	Reserved
	b7		1				AV SECAM 60	Reserved
option2		FF						
	b0		1				CH Plan	ASIA / M.E. / HK / UK / CHINA (1)
	b1		1					NZ / INDES (1)
	b2		1					AUSTRALIA (1)
	b3		1					E. EUROPE (1)
	b4		1					SPECIAL (1)
	b5		1					AMERICA (1)
	b6		1					CATV (1)
	b7		1					JAPAN (1)
option3		10						
	b0		0				sub picture	without sub-picture (0), with sub-picture (1)
	b1		0				2tuner	2 tuner (1), 1 tuner (0)
	b2		0				VGA	enable (1)
	b3		0				YUV	enable (1)
	b4		1				Wide (16:9)	16:9 (1), 4:3 (0)
	b5		0				HYPER	not use
	b6		0				SIF	I only(0), BG only(1)
	b7		0					I/BG/DK/L(2), BG/DK(3)
option4		E2						
	b0		0				A2 enable	4.5 (1)
	b1		1					5.5 (1)
	b2		0					6.0 (1)
	b3		0					6.5 (1)
	b4		0				NICAM enable	4.5 (1)
	b5		1					5.5 (1)
	b6		1					6.0 (1)
	b7		1					6.5 (1)
option5		DE						
	b0		0				A2 select 6.5MHz	5.742 MHz (0), 6.742 MHz
	b1		1				NICAM priority	ASIA / M.E. (1)
	b2		1					HK / UK (1)
	b3		1					CHINA (1)
	b4		1					NZ / INDN (1)
	b5		0					AUSTRALIA (1)
	b6		1					E. EUROPE (1)
	b7		1					SPECIAL (1)
option6		C1						
	b0		1				VCR/GAME in search	On (0), Off (1)
	b1		0				SASO enable	SASO enable (1)
	b2		0				Noise mute	Noise mute enable(0)
	b3		0				Monitor out AV1 mute	Monitor out AV1 mute(1)
	b4		0				AV SW 3/2AV out	set to 0
	b5		0				Tuner	MACO tuner (0), ALPS tuner (1)
	b6		1				Child lock	Child lock enable (1)
	b7		1				TEXT VDEFEAT	VDEFEAT ON (1), OFF (0)
option7		46						
	b0		0				Power up EC-Mode	Power on EC enable (1)
	b1		1				CH Blanking	Blanking enable (1)
	b2		1				AV Blanking	Blanking enable (1)
	b3		0				Auto WIDE	WSS enable only in aspect Auto (0), WSS always enable (1)
	b4		0				Volume correction	TV Volume correction enable (1)
	b5		0				AVLink	Q-Link on/off selectable in menu (1)
	b6		1				MPX/NICAM display	Display NICAM (0), Display MPX (1)
	b7		0				free	

Option Models		M	Q	Z	X	T	Description	
option8		51	D0			51		
	b0	1	0			1	Teletext CH Refresh	Enable(1)
	b1	0	0			0	Geomagnetic Sensor	set to 0
	b2	0	0			0	Geomagnetic Polarity	set to 0
	b3	0	0			0	RF Attenuation	Enable(1)
	b4	1	1			1	Fine tuning	Enable(1)
	b5	0	0			0	Search speed	Slow(1) Fast(0)
	b6	1	1			1	TEXT FLOF	Reserved
	b7	0	1			0	TEXT TOP	TOP enable (1)
option9				80				
	b0			0			free	
	b1			0			free	
	b2			0			free	
	b3			0			free	
	b4			0			free	
	b5			0			Surround SP polarity	set to 0
	b6			0			Volume curve	Volume curve1(0), curve2(1)
	b7			1			Volume EXDAC	Add Volume
option10				89	83	85		
	b0	1		1	1	1	OSD language	English Only enable (1) : Top Priority
	b1	0		1	0			Arabic enable (1)
	b2	0		0	0	1		Russian enable (1)
	b3	1		0	0			Chinese enable (1)
	b4	0		0	0	0	Blue Back	enable(0)
	b5	0		0	0	0	free	
	b6	0		0	0	0	free	
	b7	1		1	1	1	OVP	set to 1
option11				0A				
	b0			0			Shop mode	enable(1)
	b1			0			Full / 16:9 display	Reserved
	b2			0			Sub Headphone	enable (1)
	b3			1			Scan mode Blanking	Blanking enable (1)
	b4			0			User aspect 14:9	enable (1)
	b5			1			NICAM C4 bit	enable (1)
	b6			0			ID-1	enable (1)
	b7			1			1080i	enable (1)
option12		41	43			41	Area Option	
	b0	1	1			1	Asia	Asia (1), europe (0)
	b1	0	1			0	Australia	Australia (1)
	b2	0	0			0	Ireland	Ireland(1)
	b3	0	0			0	UK	UK(1)
	b4	0	0			0	MELCOA	MELCOA (1)
	b5	0	0			0	28 inch	Reserved for 28 inch etc.
	b6	1	1			1	Large size	set to 1
	b7	0	0			0	PTV	set to 0
option13				4A			Temporary	
	b0			0			VDU Version	A21 (0), A12(1)
	b1			1			GC Version	ES5 (0), ES6 (1)
	b2			0			UV Swap	Swap (1)
	b3			1			TEXT	Enable (1)
	b4			0			LT2 22inch	22inch (1), 15inch (0)
	b5			0			free	
	b6			1			Picture Shift	set to 1
	b7			0			CIP2	without CIP1 (0), with CIP (1)

8.4. Option Code Setting

If the memory IC (IC1004) or DG Board is replaced, option code should be re-memorized.

Spare part of IC1004 is already memorized all Data for TX-15LT2M/Z.

If you use for other model, you should re-memorized the different option code in SERVICE 2 mode.

TX-15LT2M/Z		TX-15LT2Q		TX-15LT2X		TX-15LT2T	
OPTION		OPTION		OPTION		OPTION	
OPTION1	CF	OPTION1	CF	OPTION1	CF	OPTION1	CF
OPTION2	FF	OPTION2	FF	OPTION2	FF	OPTION2	FF
OPTION3	10	OPTION3	10	OPTION3	10	OPTION3	10
OPTION4	E2	OPTION4	E2	OPTION4	E2	OPTION4	E2
OPTION5	DE	OPTION5	DE	OPTION5	DE	OPTION5	DE
OPTION6	C1	OPTION6	C1	OPTION6	C1	OPTION6	C1
OPTION7	46	OPTION7	46	OPTION7	46	OPTION7	46
OPTION8	51	OPTION8	D0	OPTION8	51	OPTION8	51
OPTION9	80	OPTION9	80	OPTION9	80	OPTION9	80
OPTION10	89	OPTION10	89	OPTION10	83	OPTION10	85
OPTION11	0A	OPTION11	0A	OPTION11	0A	OPTION11	0A
OPTION12	41	OPTION12	43	OPTION12	41	OPTION12	41
OPTION13	4A	OPTION13	4A	OPTION13	4A	OPTION13	4A

9 Adjustment

9.1. RF AGC Adjustment

1. Connect RF signal generator to antenna terminal.
2. Receive a RF signal, Colour bar.
3. Enter service 1 mode, and select RF AGC.
4. Adjustment begins when the blue button of the remote controller is pushed.
5. It waits to become stable.
6. The STR button of the remote controller is pushed, and adjustment value is saved.

9.2. DVCO Adjustment

1. Connect PAL colour bar signal generator to AV1 (SCART) terminal.
2. Input a PAL Color bar.
3. Enter service 1 mode, and select DVCO.
4. Adjustment begins when the blue button of the remote controller is pushed.
5. It waits to become stable.
6. The STR button on remote controller is pushed, and adjustment value is saved.

Remarks:

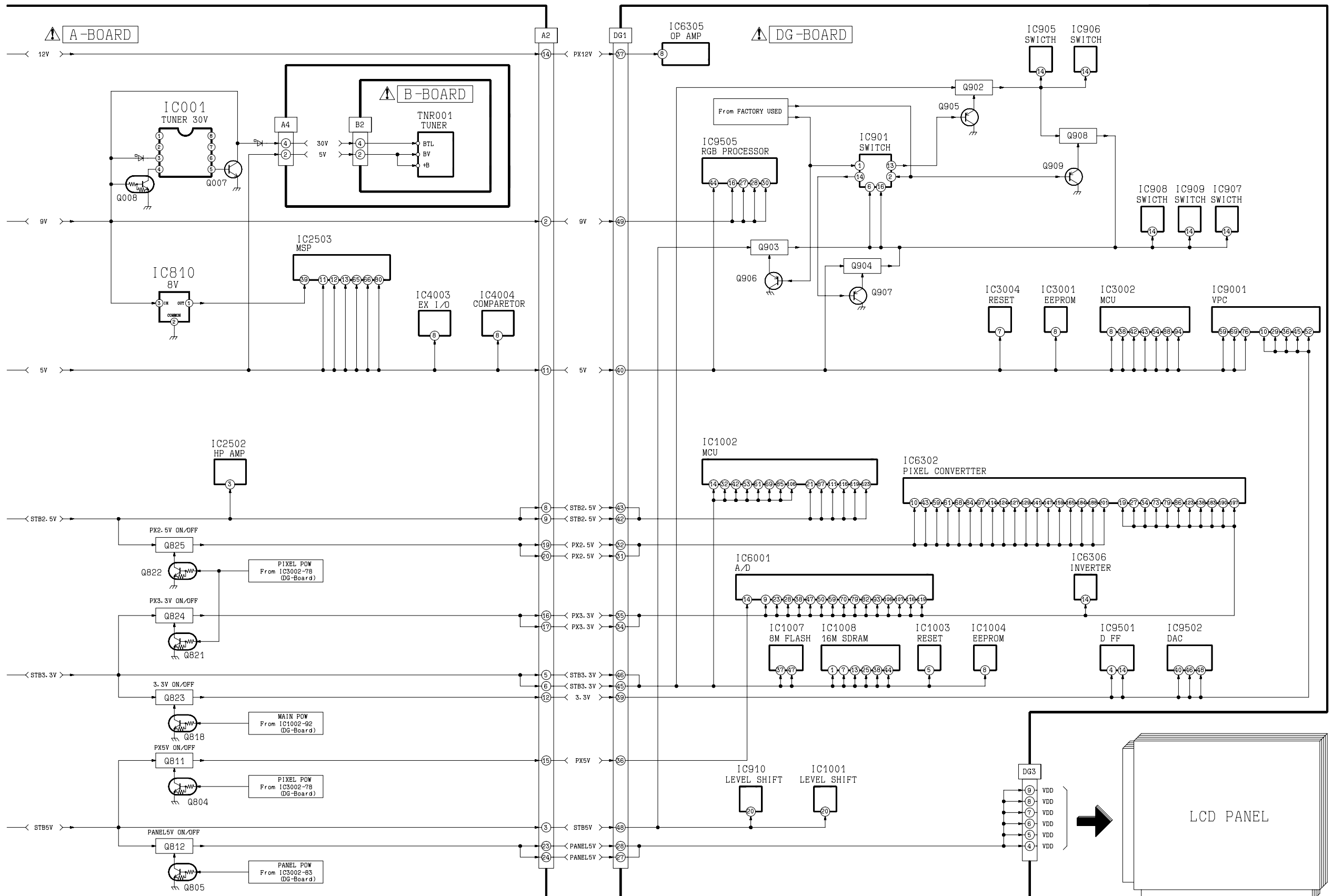
1. The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection.

The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions.

All circuits, except the Power Circuit, are cold.

Precautions

- a. Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
 - b. Do not short- circuit the hot and cold circuits or a fuse may blow and parts may break.
 - c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow.
Connect the earth of instruments to the earth connection of the circuit being measured.
 - d. Make sure to disconnect the power plug before removing the chassis.
2. Following diodes are interchangeable.
MA150- MA162 (Replacement part)



TX-15LT2M/Q/T/X/Z Power Block Diagram

TX-15LT2M/Q/T/X/Z Power Block Diagram

8

9

10

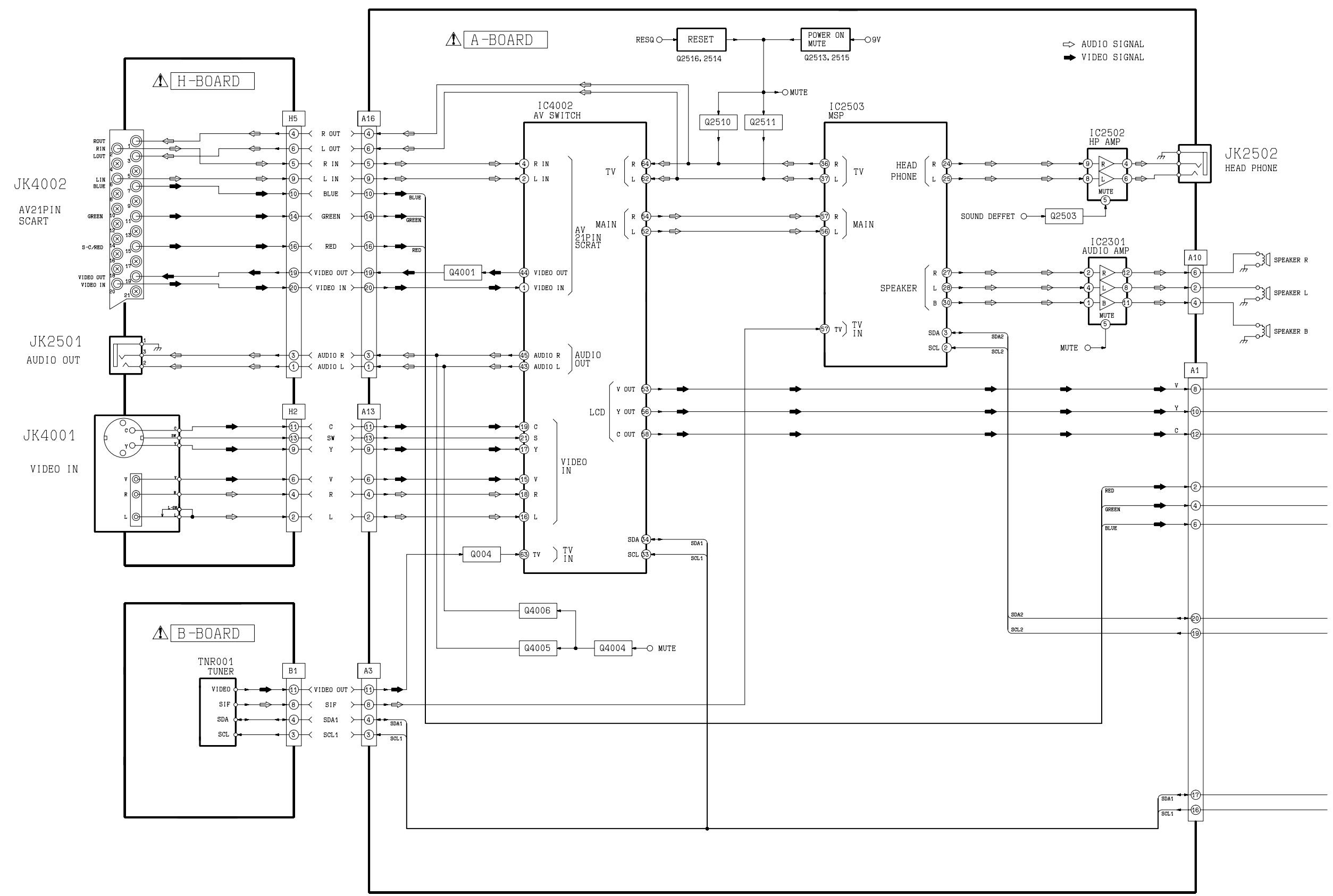
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12

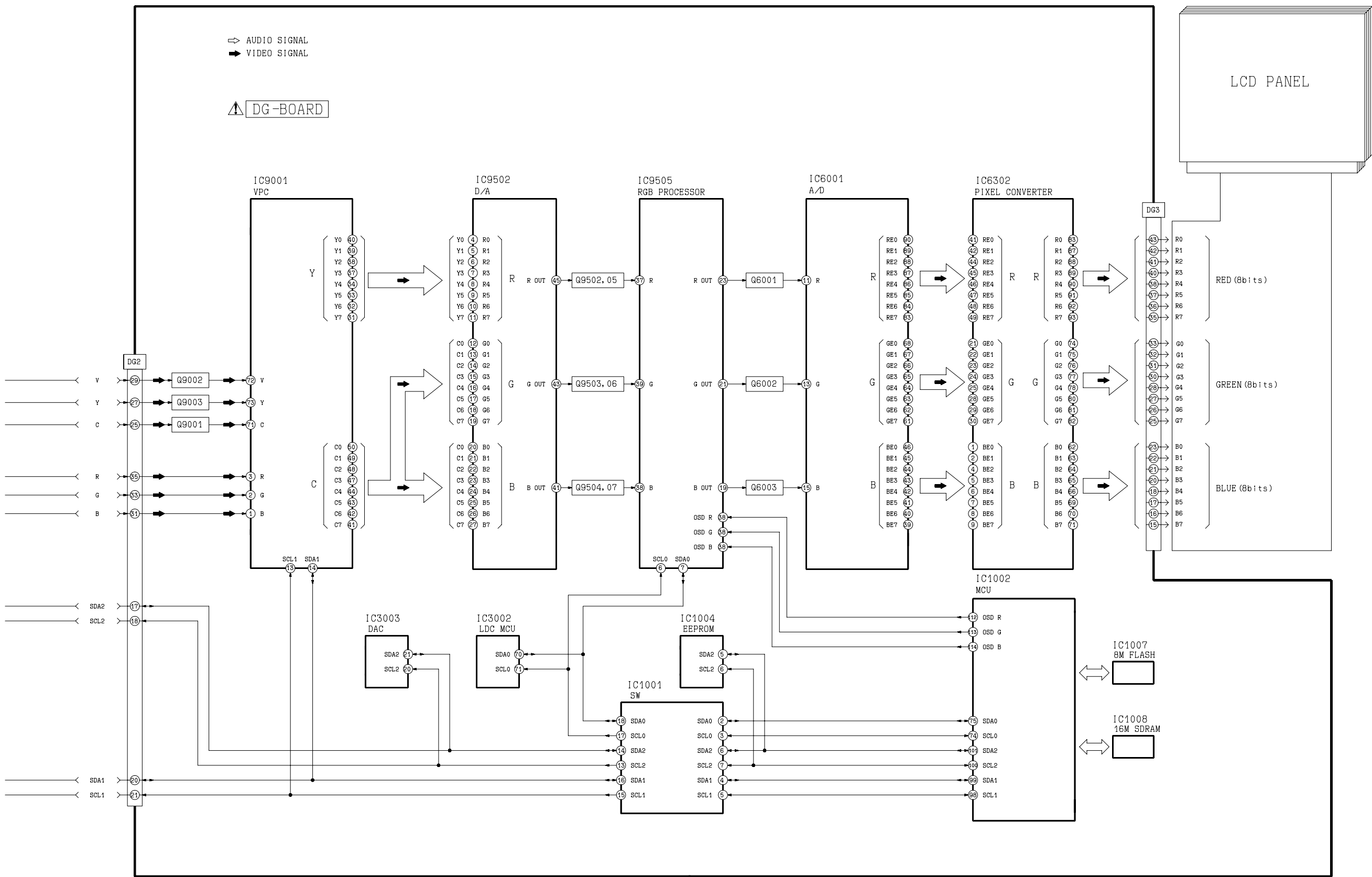
13

14

A
B
C
D
E



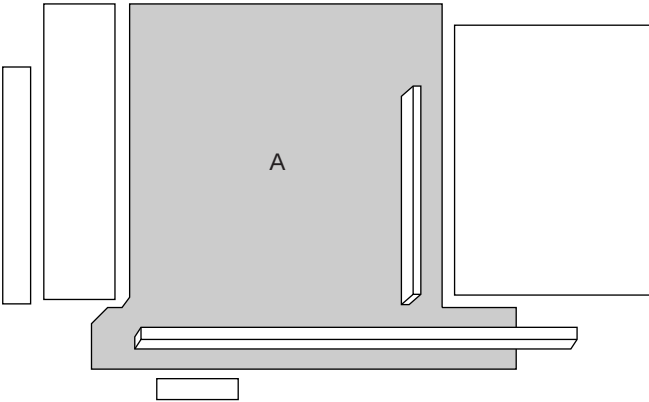
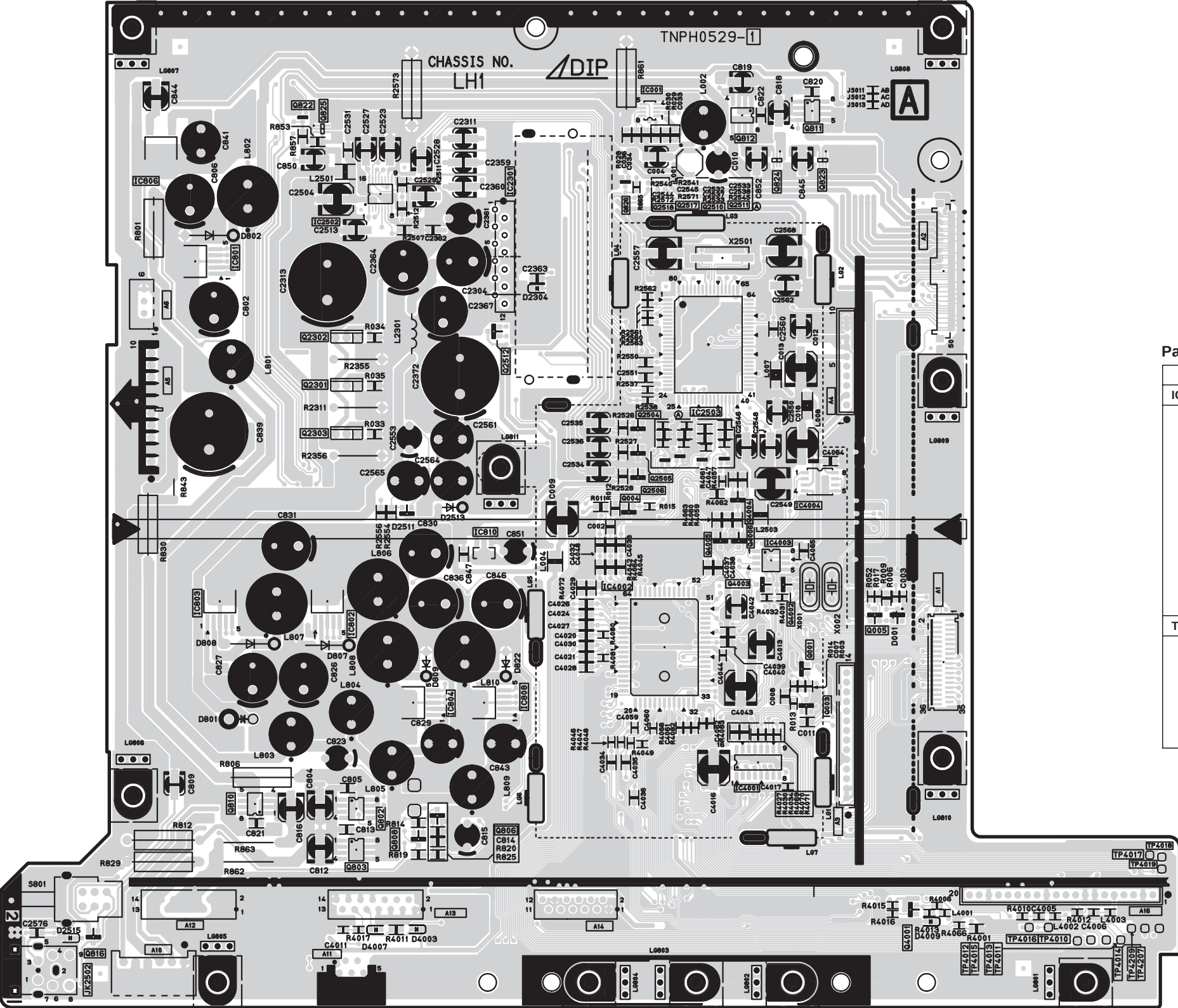
TX-15LT2M/Q/T/X/Z Signal Block Diagram TX-15LT2M/Q/T/X/Z Signal Block Diagram



TX-15LT2M/Q/T/X/Z Signal Block Diagram

TX-15LT2M/Q/T/X/Z Signal Block Diagram

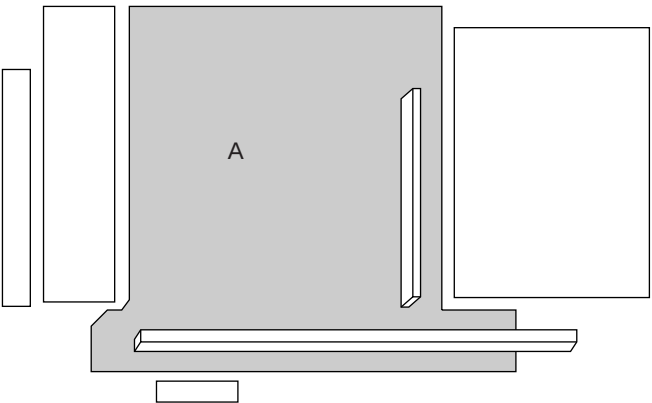
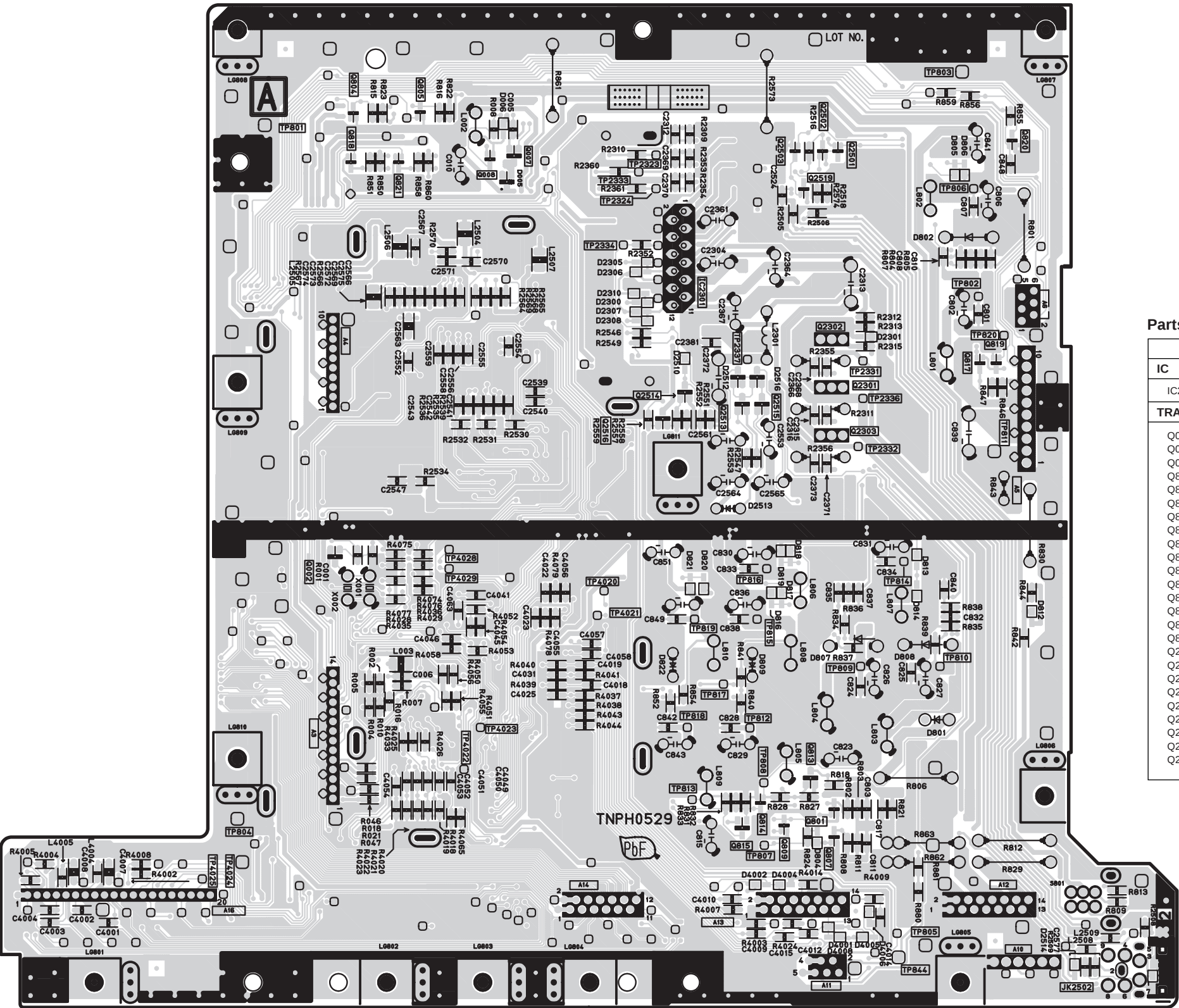
A-BOARD (COMPONENT SIDE)
TNPH0529



Parts Location

A-BOARD (COMPONENT SIDE)									
IC		Q810		B-2		TP			
IC001	D-6	Q811	E-5			TP4010	F-1		
IC801	B-5	Q812	E-5			TP4011	F-1		
IC802	C-3	Q816	A-1			TP4012	F-1		
IC803	B-3	Q822	B-5			TP4013	F-1		
IC804	C-2	Q823	E-5			TP4014	G-1		
IC806	B-5	Q824	E-5			TP4015	F-1		
IC808	C-2	Q825	B-5			TP4016	F-1		
IC810	C-3	Q826	D-5			TP4017	G-2		
IC2301	C-5	Q2301	B-4			TP4018	G-2		
IC2502	B-5	Q2302	B-4			TP4019	G-2		
IC2503	D-4	Q2303	B-4			TP4207	G-1		
IC4001	E-2	Q2504	D-4			TP4209	G-1		
IC4002	D-3	Q2505	D-4						
IC4003	E-3	Q2506	D-3						
IC4004	E-3	Q2510	E-5						
TRANSISTOR		Q2511	E-5						
Q001	E-3	Q2512	C-4						
Q003	E-2	Q2517	D-5						
Q004	D-3	Q2518	D-5						
Q005	E-3	Q4001	E-1						
Q802	C-2	Q4002	E-3						
Q803	C-2	Q4003	E-3						
Q806	C-2	Q4004	E-3						
Q808	C-2	Q4005	D-3						
		Q4006	E-3						

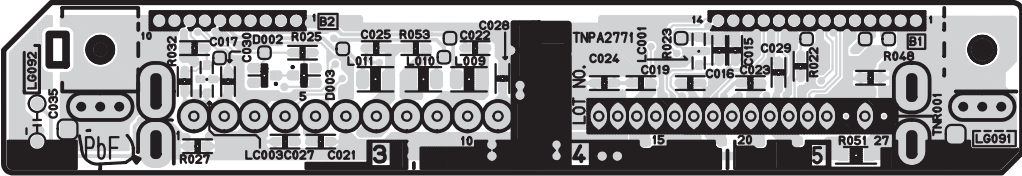
A-BOARD (FOIL SIDE)
TNPH0529



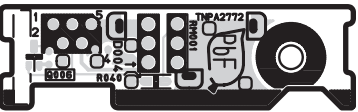
Parts Location

A-BOARD (FOIL SIDE)					
IC		TP			
IC2301	D-4	Q2516	D-4	TP2336	E-4
TRANSISTOR		Q2519	E-5	TP4020	D-3
		TP801	B-5	TP4021	D-3
		TP802	F-5	TP4022	C-2
		TP803	F-6	TP4023	C-2
		TP804	B-2	TP4024	B-1
		TP805	F-1	TP4025	B-1
		TP806	F-5	TP4028	C-3
		TP807	E-2	TP4029	C-3
		TP808	E-2		
		TP809	E-3		
		TP810	F-3		
		TP811	F-4		
		TP812	E-2		
		TP813	D-2		
		TP814	E-3		
		TP815	E-3		
Q002	B-3	TP816	E-3		
Q007	C-5	TP817	E-2		
Q008	C-5	TP818	D-2		
Q801	E-2	TP819	D-3		
Q804	C-6	TP820	F-4		
Q805	C-6	TP844	F-1		
Q807	E-2	TP2323	D-5		
Q809	E-2	TP2324	D-5		
Q813	E-2	TP2331	E-4		
Q814	E-2	TP2332	E-4		
Q815	E-2	TP2333	D-5		
Q817	F-4	TP2334	D-5		
Q818	C-5				
Q819	F-4				
Q820	F-5				
Q821	C-5				
Q2301	E-4				
Q2302	E-4				
Q2303	E-4				
Q2501	E-5				
Q2502	E-5				
Q2503	E-5				
Q2513	E-4				
Q2514	D-4				
Q2515	E-4				

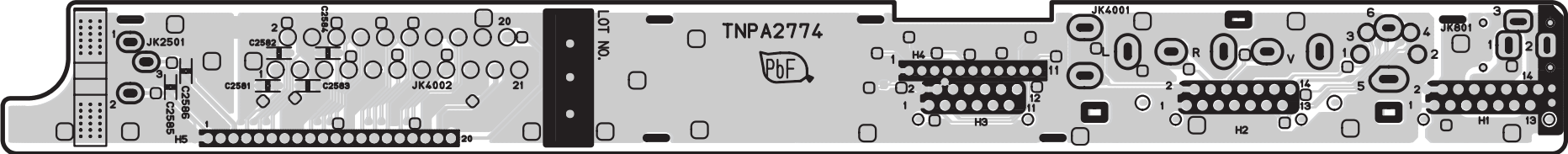
B-BBOARD (FOIL SIDE)
TXN/B10HGK



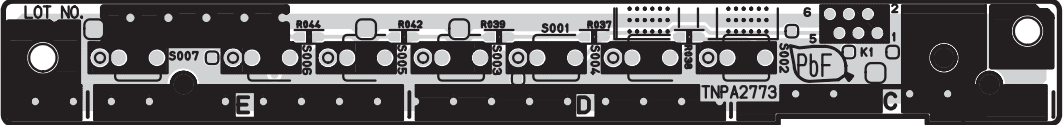
V-BBOARD (FOIL SIDE)
TNPA2772



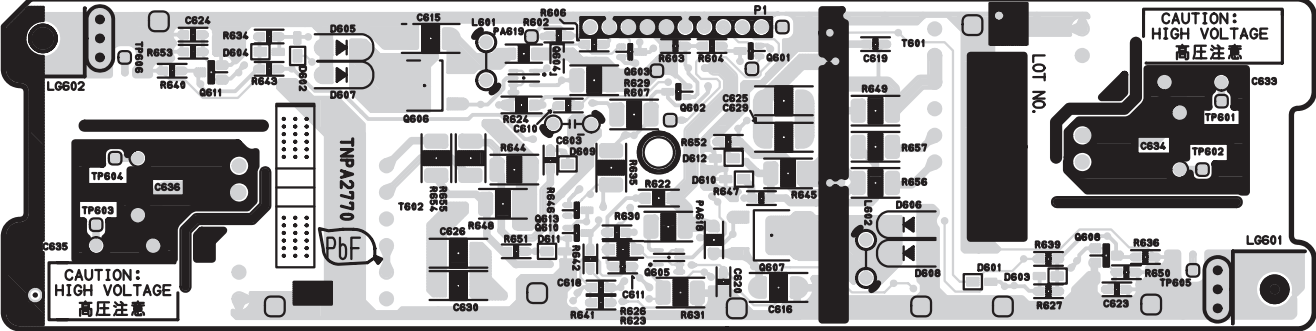
H-BBOARD (FOIL SIDE)
TNPA2774



K-BBOARD (FOIL SIDE)
TNPA2773

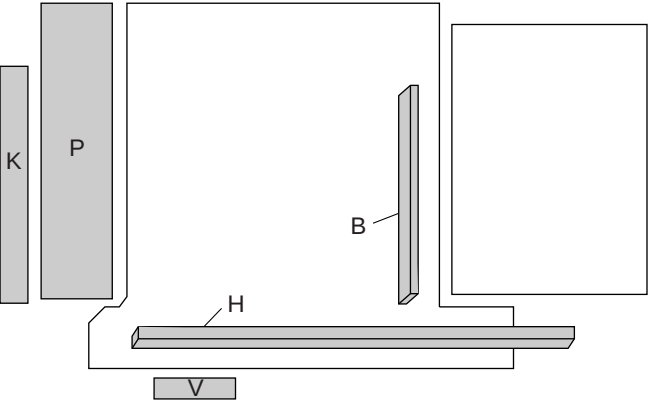


P-BBOARD (FOIL SIDE)
TNPA2770

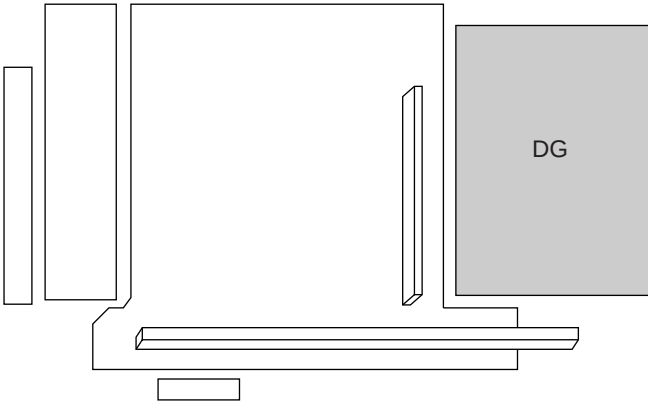
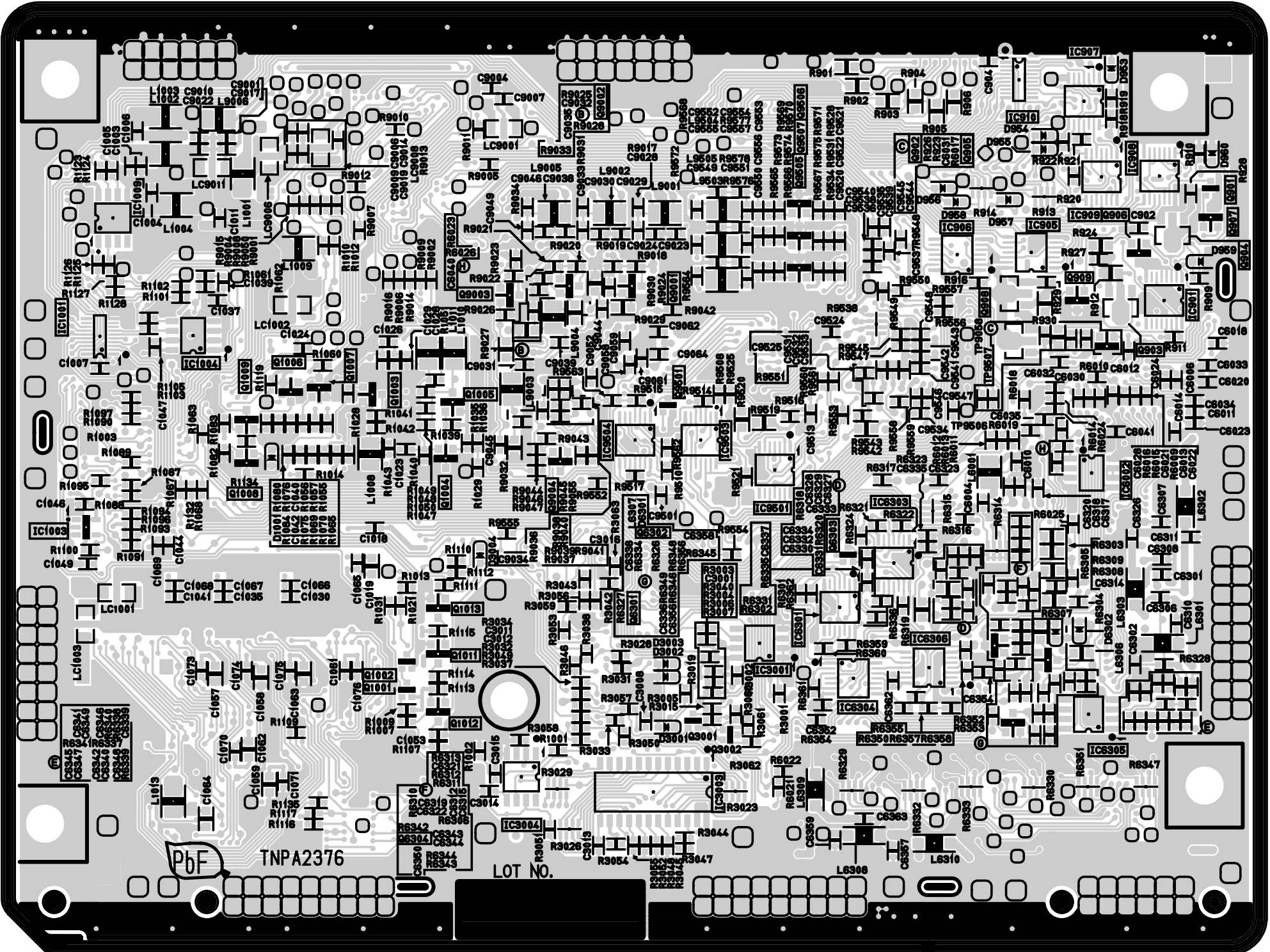


Parts Location

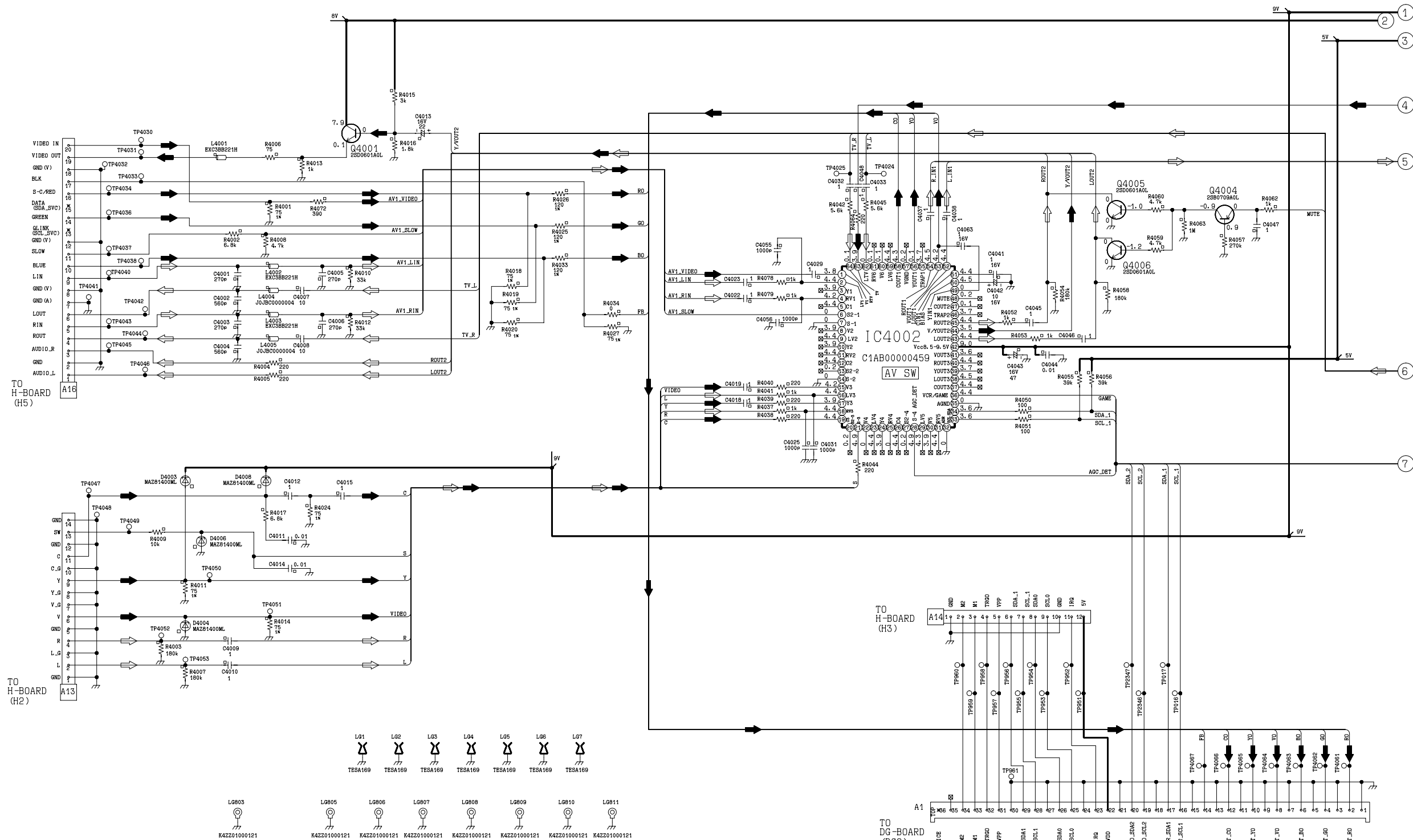
P-BBOARD (FOIL SIDE)			
TRANSISTOR		TP	
Q601	C-2	TP601	E-2
Q602	C-2	TP602	E-1
Q603	C-2	TP603	A-1
Q604	C-2	TP604	A-1
Q605	C-1	TP605	E-1
Q606	B-2	TP606	A-2
Q607	C-1		
Q608	E-1		
Q610	C-1		
Q611	B-2		
Q613	C-1		

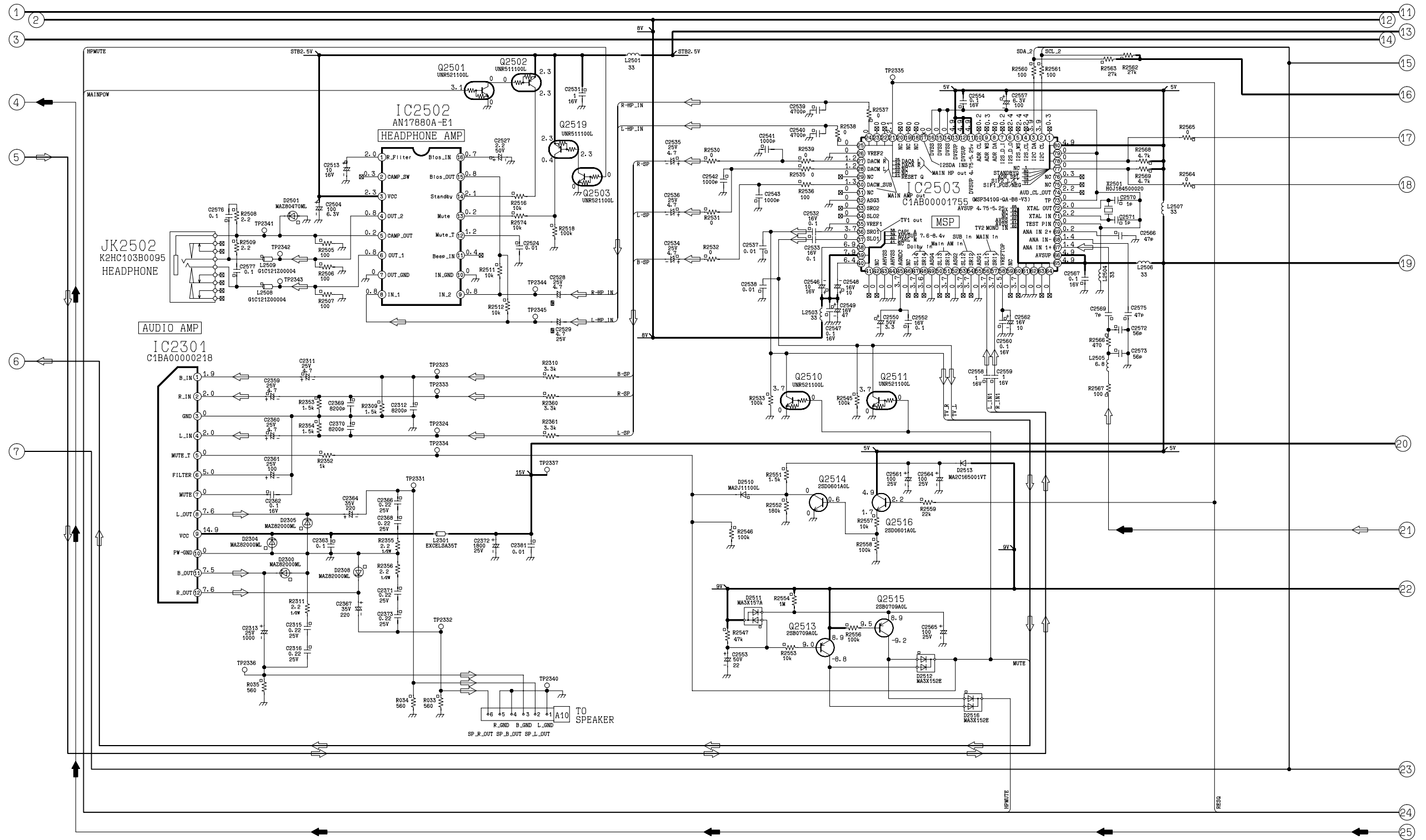


DG-BOARD (FOIL SIDE)
TXNDG10HGK

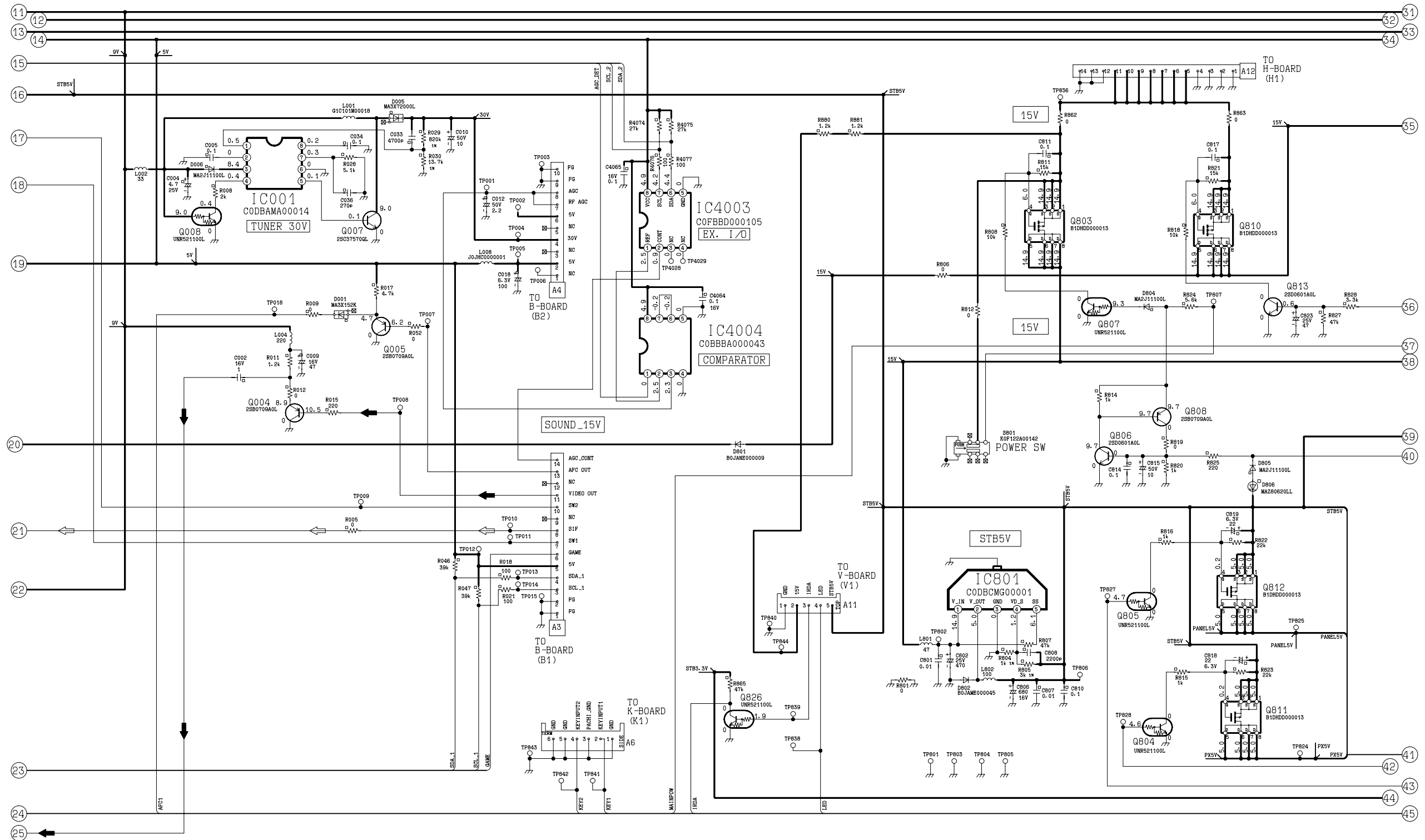


DG-BOARD (FOIL SIDE)			
IC		Q908	F-4
IC901	G-4	Q909	F-4
IC905	F-5	Q1001	C-2
IC906	F-5	Q1002	C-2
IC907	F-6	Q1003	C-4
IC908	G-5	Q1004	C-3
IC909	F-5	Q1005	C-4
IC910	F-5	Q1006	B-4
IC1001	A-4	Q1007	C-4
IC1003	A-3	Q1008	B-3
IC1004	B-4	Q1009	B-4
IC1009	A-5	Q1011	C-2
IC3001	E-2	Q1012	C-2
IC3003	D-2	Q1013	C-3
IC3004	C-2	Q3001	D-2
IC6002	G-3	Q3002	D-2
IC6301	E-3	Q6301	D-3
IC6303	E-3	Q6302	D-3
IC6304	E-2	Q6303	E-3
IC6305	F-2	Q6304	C-1
IC6306	F-2	Q9001	D-4
IC9501	E-3	Q9002	D-5
IC9503	D-4	Q9003	C-4
IC9504	D-4	Q9004	D-3
TRANSISTOR		Q9501	D-4
Q901	G-5	Q9505	E-5
Q902	E-5	Q9506	E-5
Q903	G-4	Q9507	E-5
Q904	G-4	TP	
Q905	F-5	TP9058	F-4
Q906	F-5	TP9506	F-4
Q907	G-5	TP9507	F-4

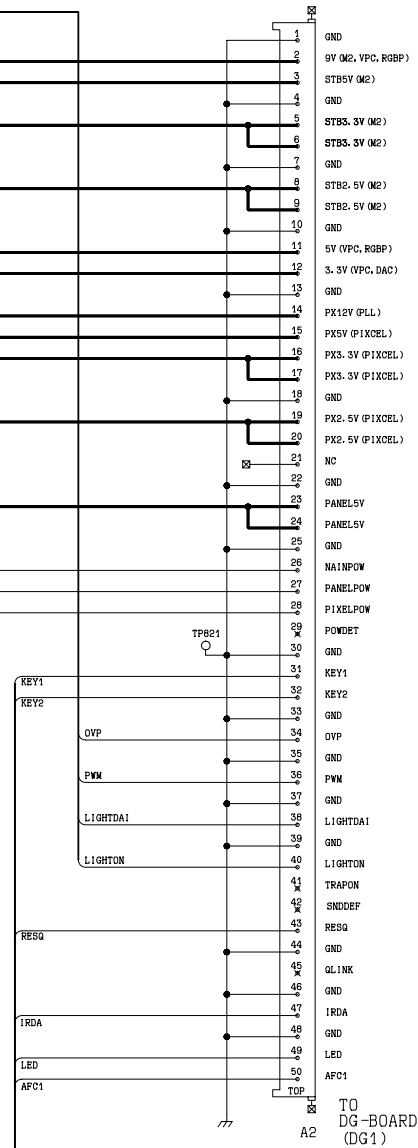
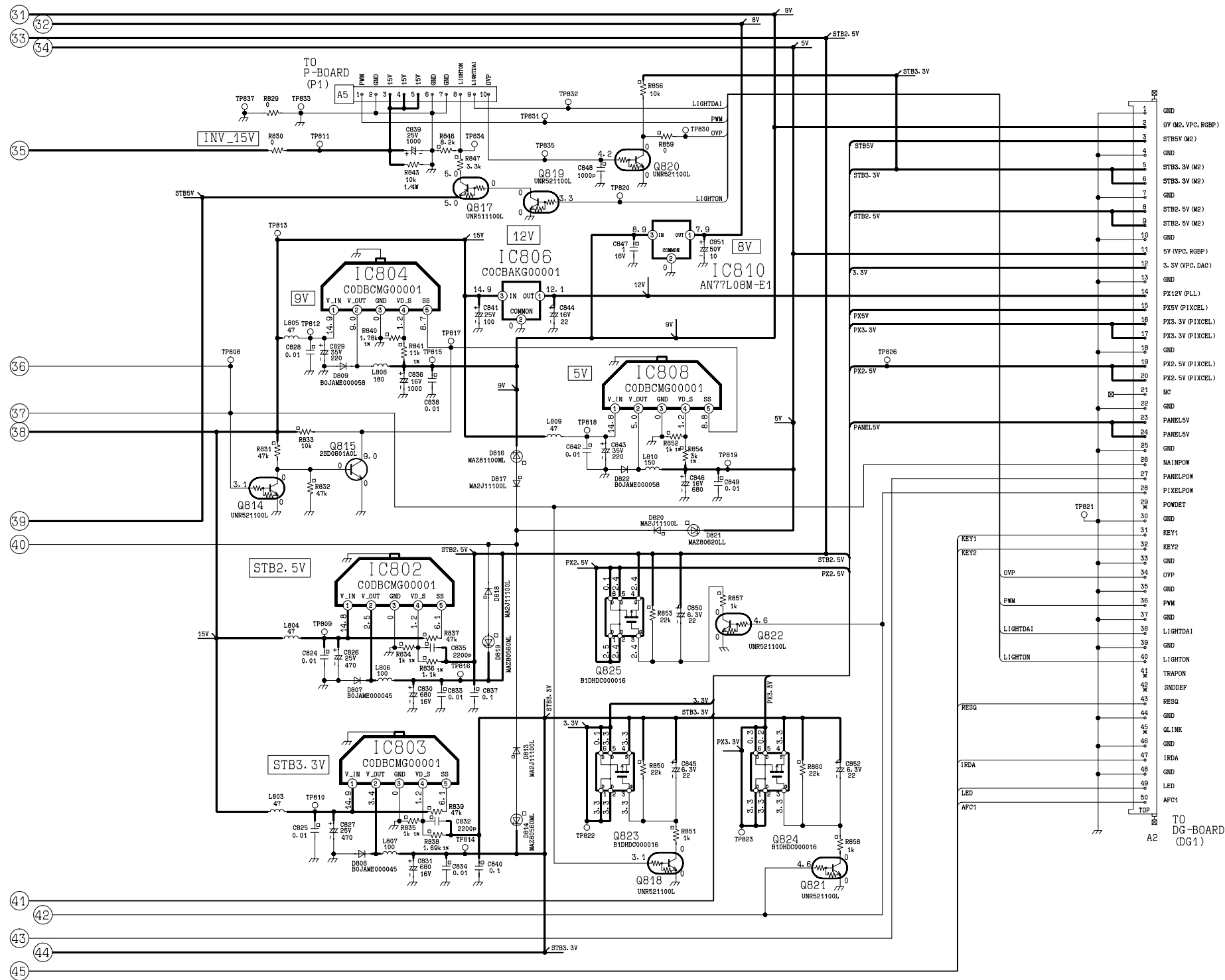


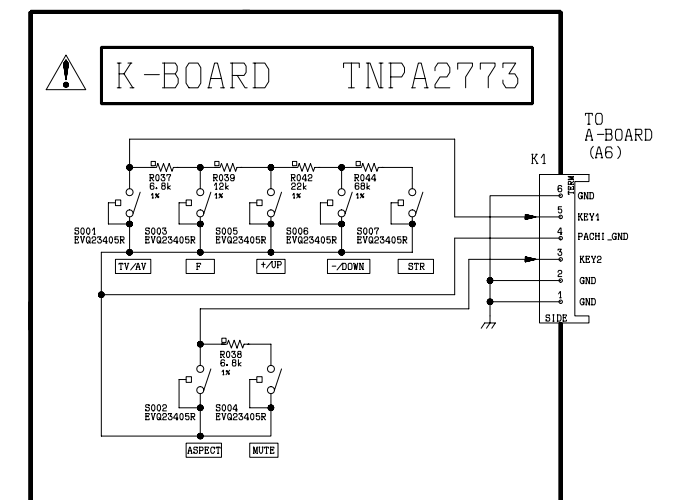
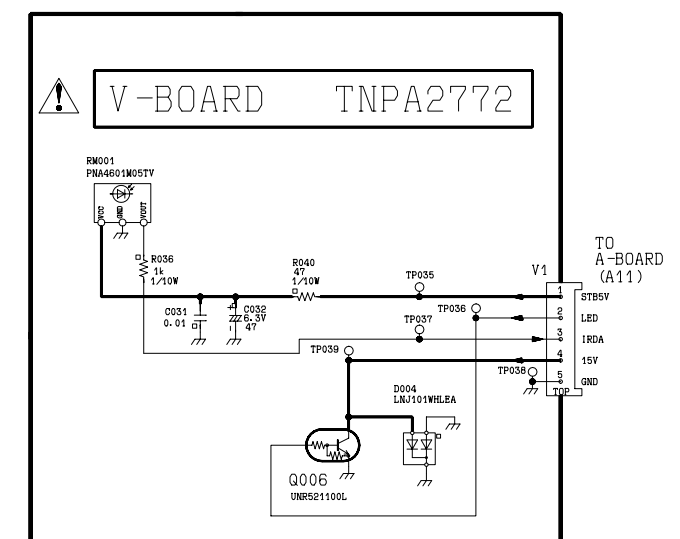
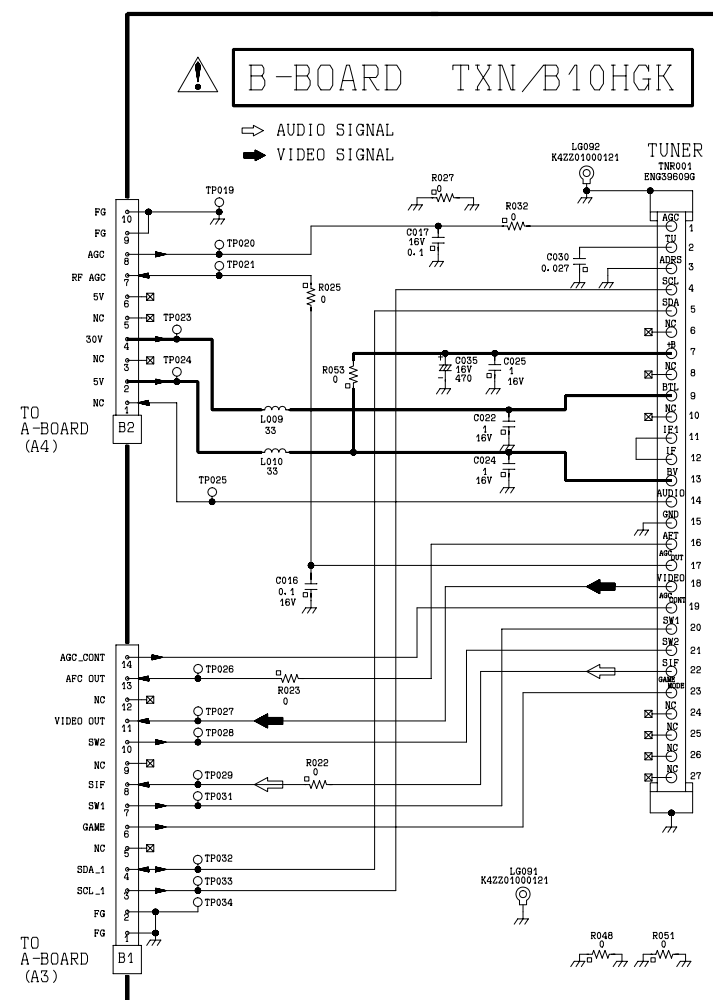
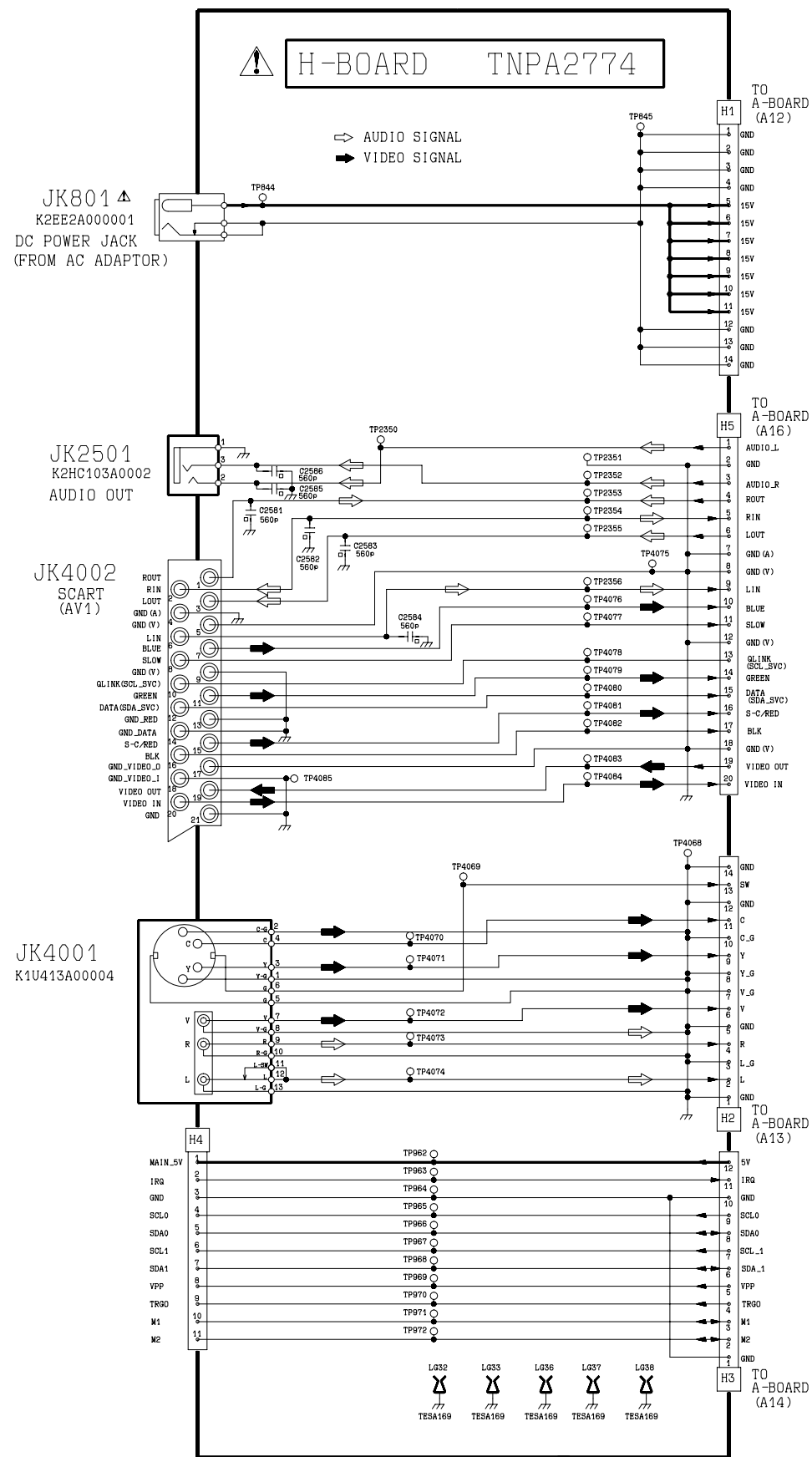


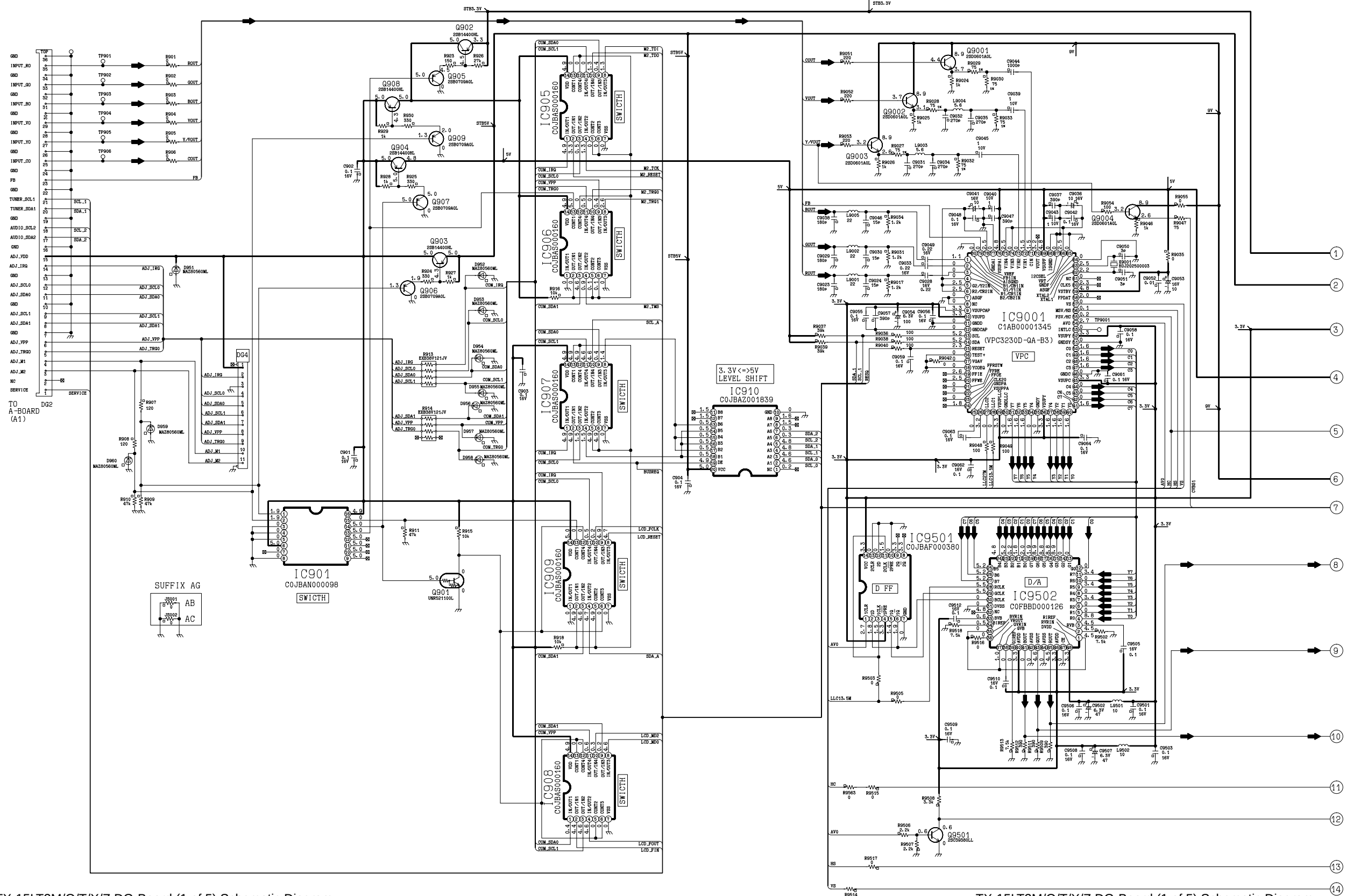
⚠ A-BOARD TNPH0529 (3/4)

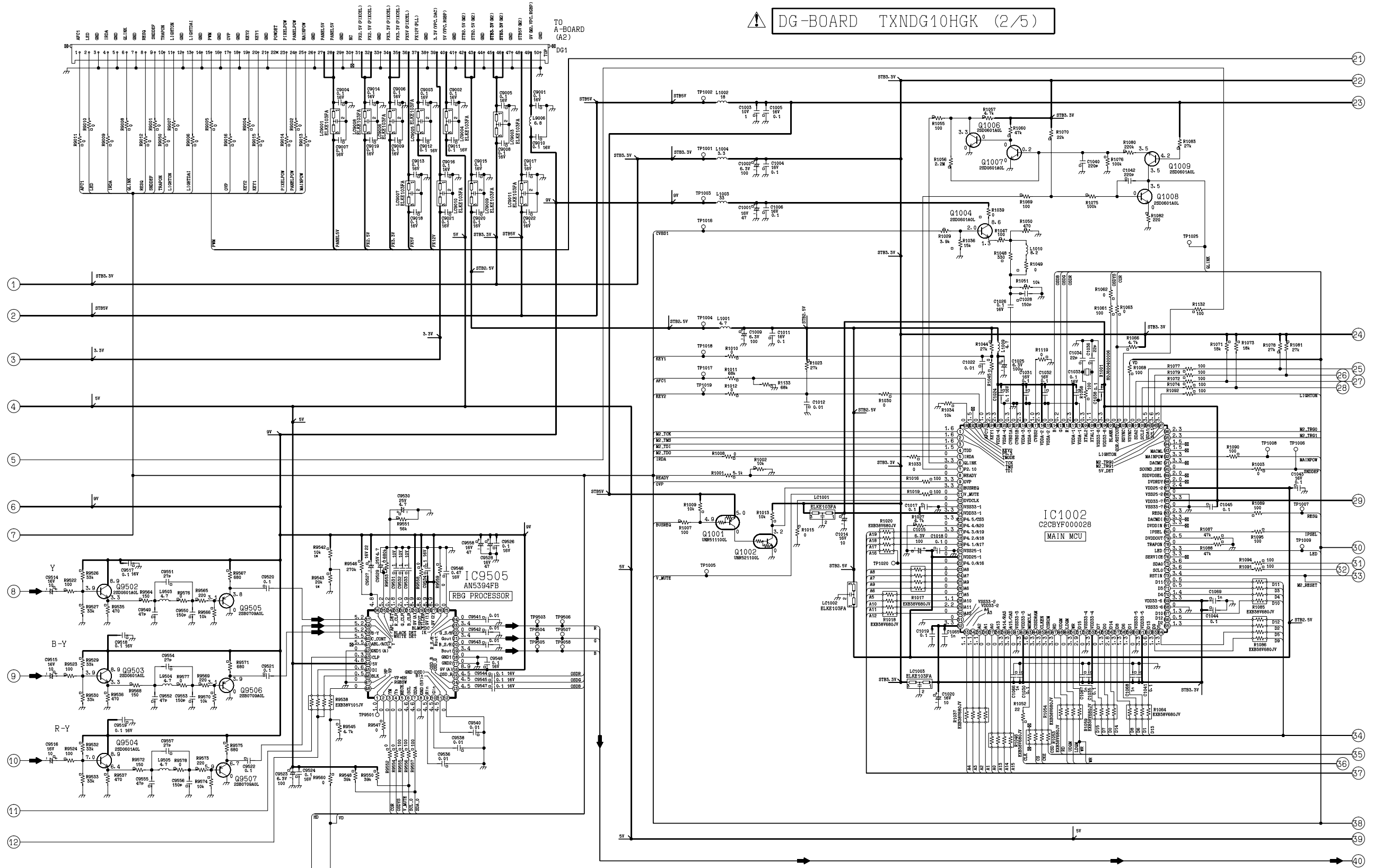


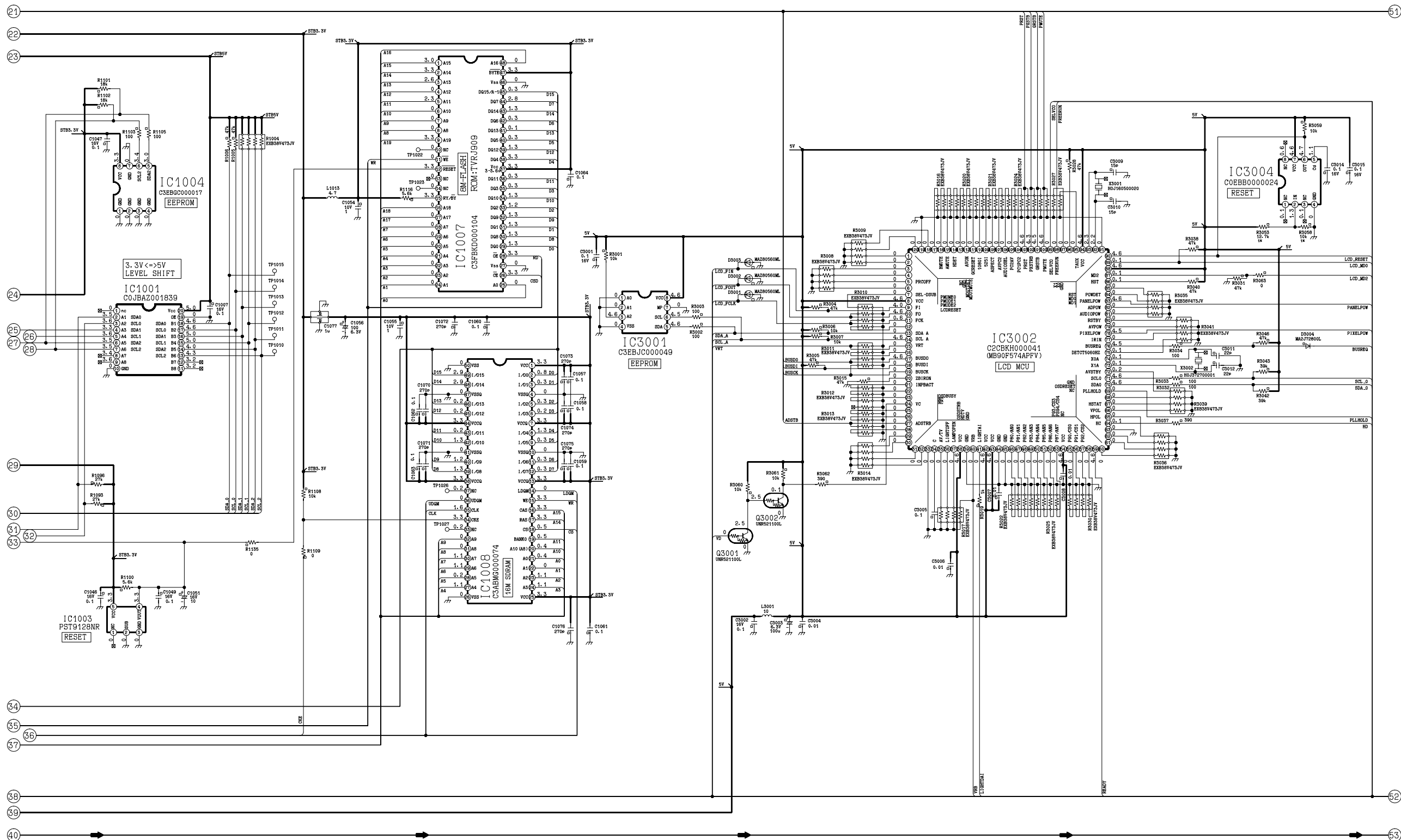
⚠ A-BOARD TNPH0529 (4/4)







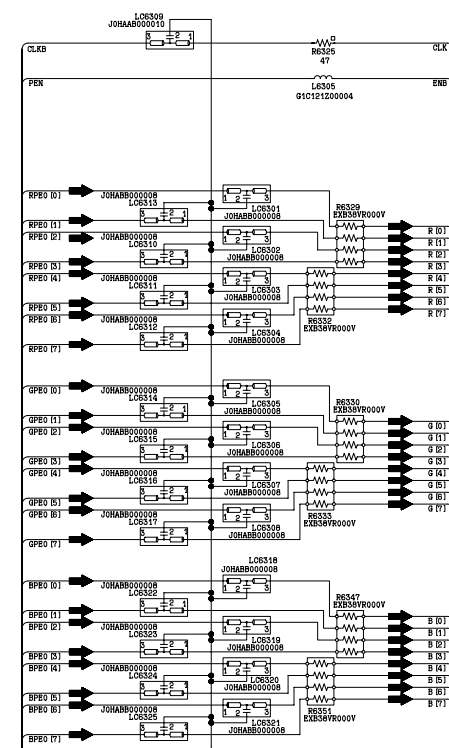






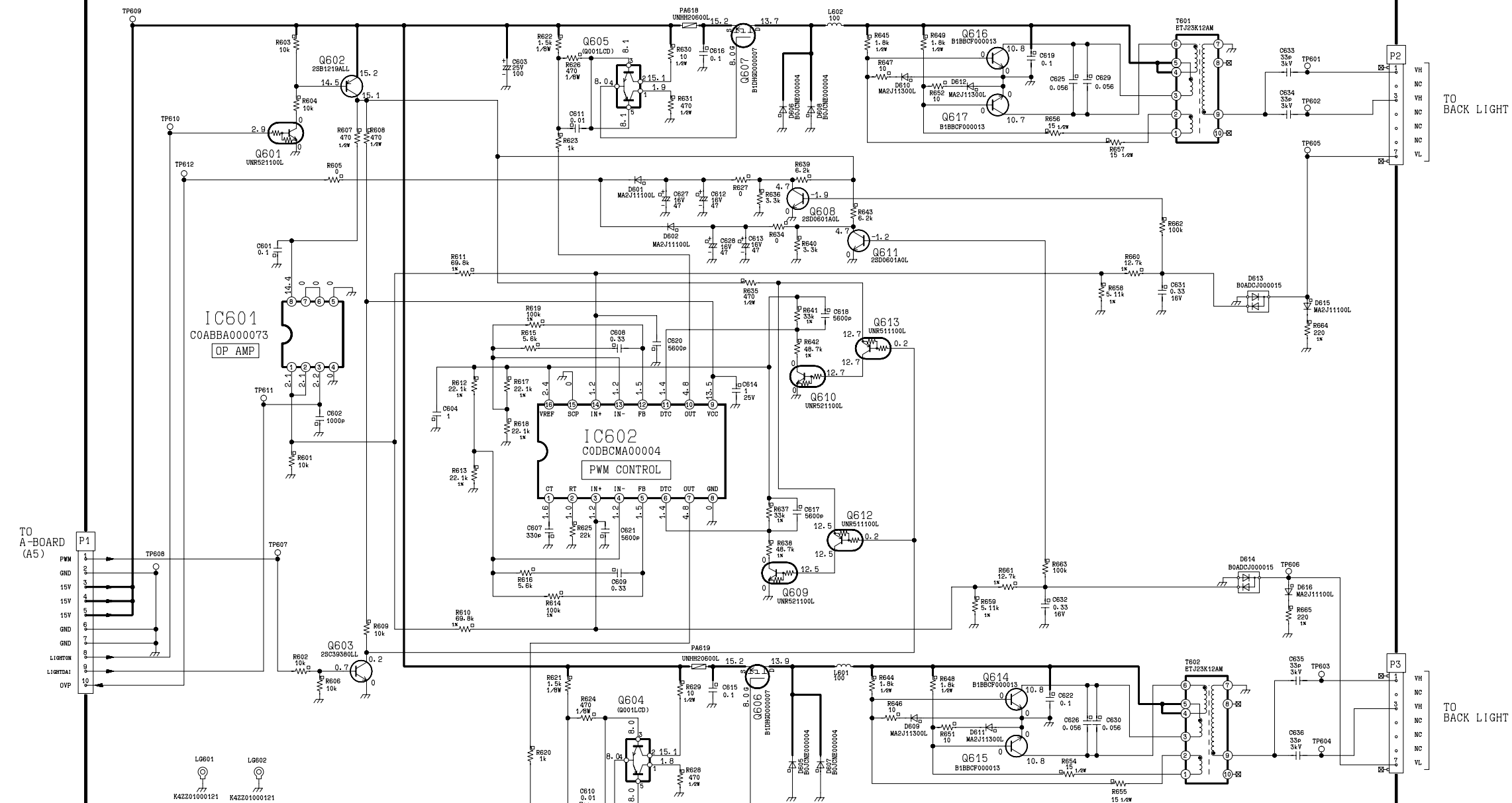
TX-15LT2M/Q/T/X/Z

TX-15LT2M/Q/T/X/Z



A
B
C
D
E

⚠ P-BOARD TNPA2770



TX-15LT2M/Q/T/X/Z
P-Board Schematic Diagram

TX-15LT2M/Q/T/X/Z
P-Board Schematic Diagram



11 Block and Schematic Diagrams

11.1. Schematic Diagram Notes

Important Safety Notice

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

Notes:

1. Resistor

All resistors are carbon 1/4W resistor, unless marked as follows:

Unit of resistance is OHM [W] (K=1,000, M=1,000,000).

$\bigcirc$	: Nonflammable	$\boxtimes$	: Metal Oxide
$\triangle$	: Solid	$\odot$	: Metal Film
$\boxplus$	: Wire Wound	$\otimes$	: Fuse:

2. Capacitor

All capacitors are ceramic 50V capacitor, unless marked as follows:

Unit of capacitance is mF, unless otherwise noted.

$\otimes$	: Temperature Compensation	$\begin{array}{c} + \\ \text{---} \text{H} \text{---} \\ \text{NP} \end{array}$	: Electrolytic
$\textcircled{M}$	: Polyester	$\begin{array}{c} \text{---} \text{H} \text{---} \\ \text{NP} \end{array}$	: Bipolar
$\textcircled{m}$	: Metalized Polyester	$\textcircled{T}$	: Dipped Tantalum
$\boxtimes$	: Polypropylene	$\textcircled{Z}$	: Z-Type

3. Coil

Unit of inductance is mF, unless otherwise noted.

4. Test Point

$\bigcirc$: Test Point position

5. Earth Symbol

$\text{---} \text{H} \text{---}$: Chassis Earth (Cold) $\downarrow$: Line Earth (Hot)

6. Voltage Measurement

Voltage is measured by a DC voltmeter.

Conditions of the measurement are the following:

Power Source AC 100-240V, 50/60Hz

Receiving Signal Colour Bar signal (RF)

All customer's controls Maximum positions

7. Number in red circle indicates waveform number.

(See waveform pattern table.)

8. When arrow mark ($\nearrow$) is found, connection is easily found from the direction of arrow

9. Indicates the major signal flow. : Video $\Rightarrow$ Audio $\Rightarrow$

10. This schematic diagram is the latest at the time of printing and subject to change without notice.

Remarks:

1. The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection.

The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions.

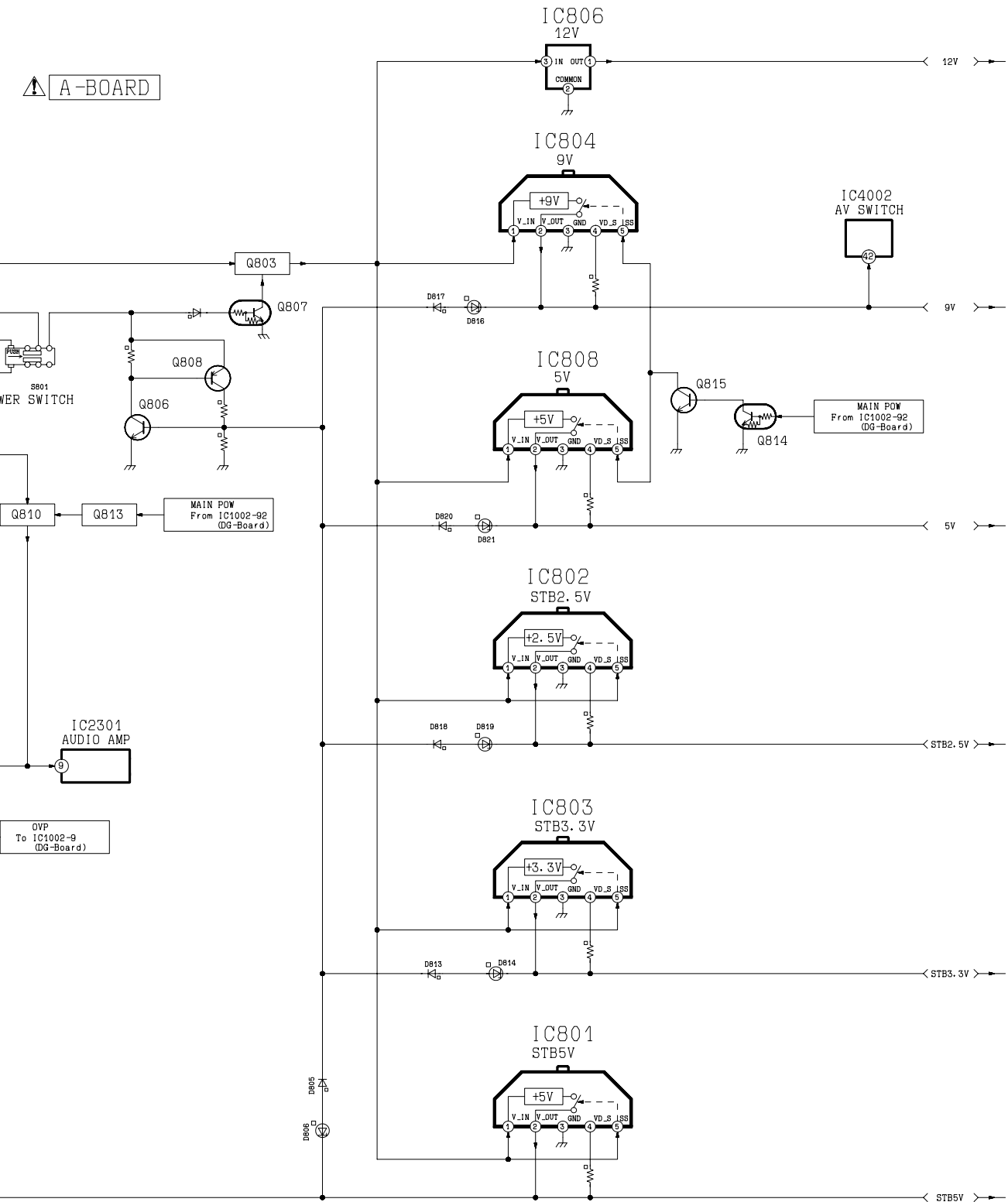
All circuits, except the Power Circuit, are cold.

Precautions

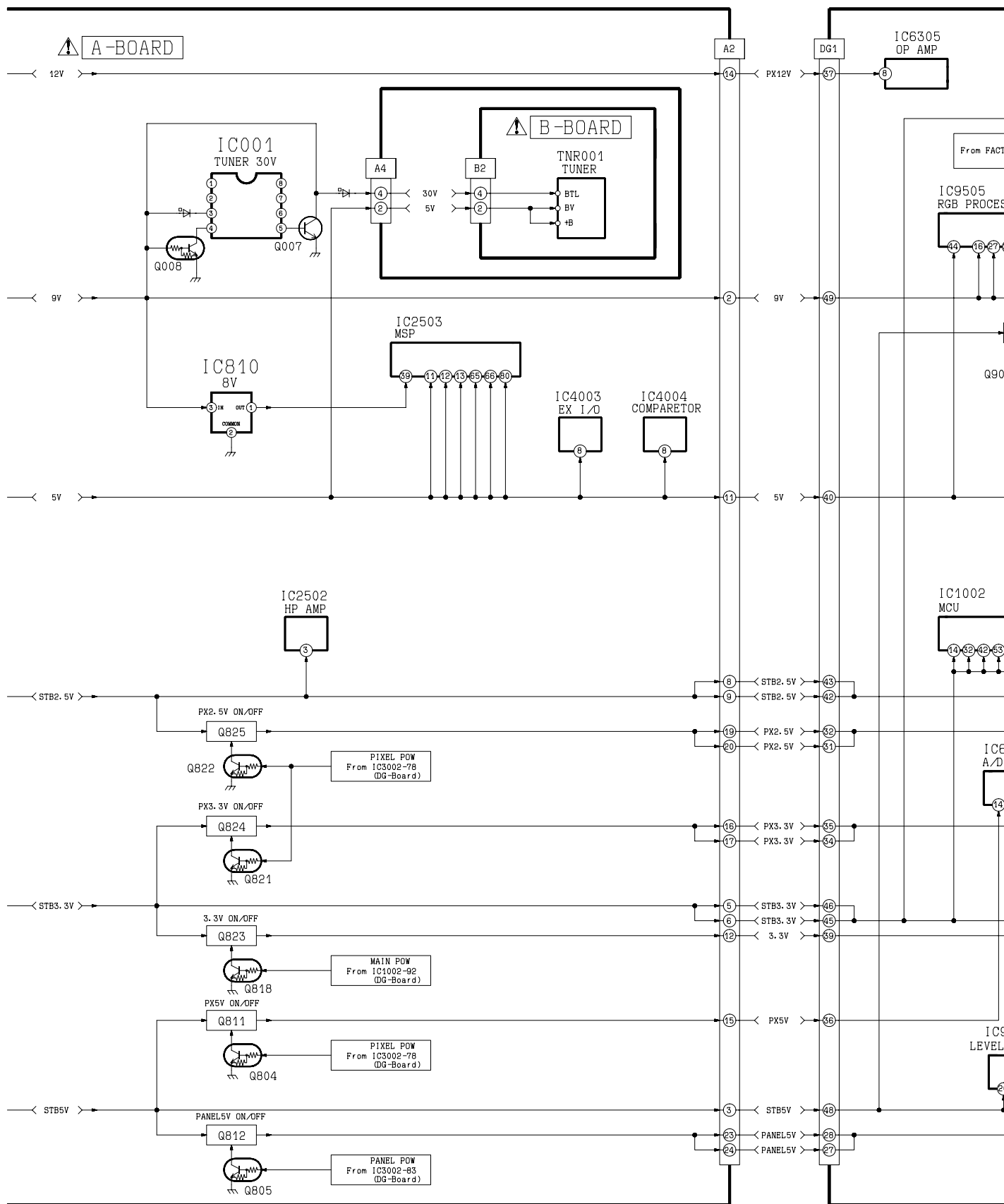
- a. Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
 - b. Do not short- circuit the hot and cold circuits or a fuse may blow and parts may break.
 - c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow.
Connect the earth of instruments to the earth connection of the circuit being measured.
 - d. Make sure to disconnect the power plug before removing the chassis.
2. Following diodes are interchangeable.
MA150- MA162 (Replacement part)



⚠ A-BOARD



TX-15LT2M/Q/T/X/Z Power Block Diagram



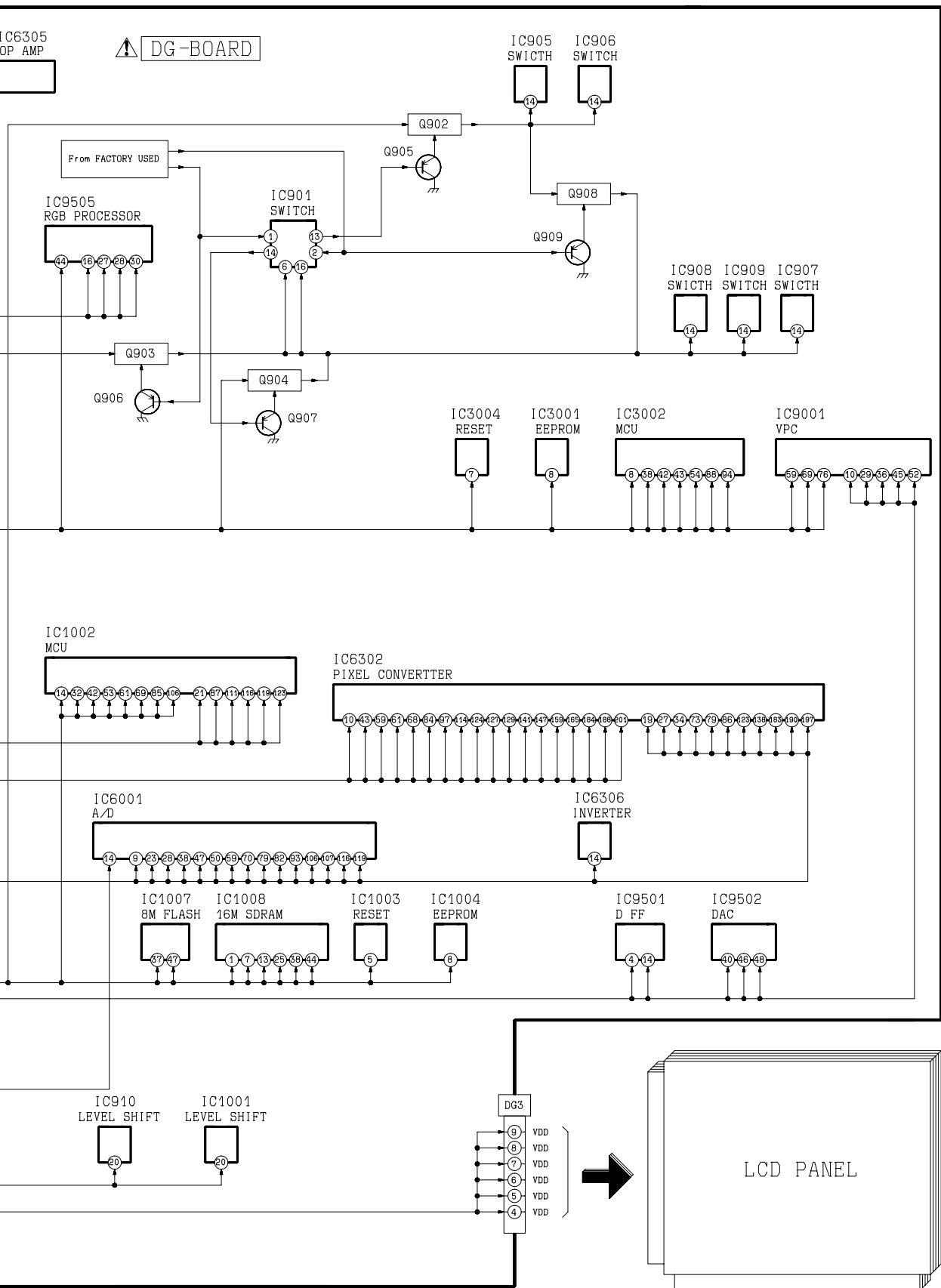
TX-15LT2M/Q/T/X/Z Power Block Diagram

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11



TX-15LT2M/Q/T/X/Z Power Block Diagram

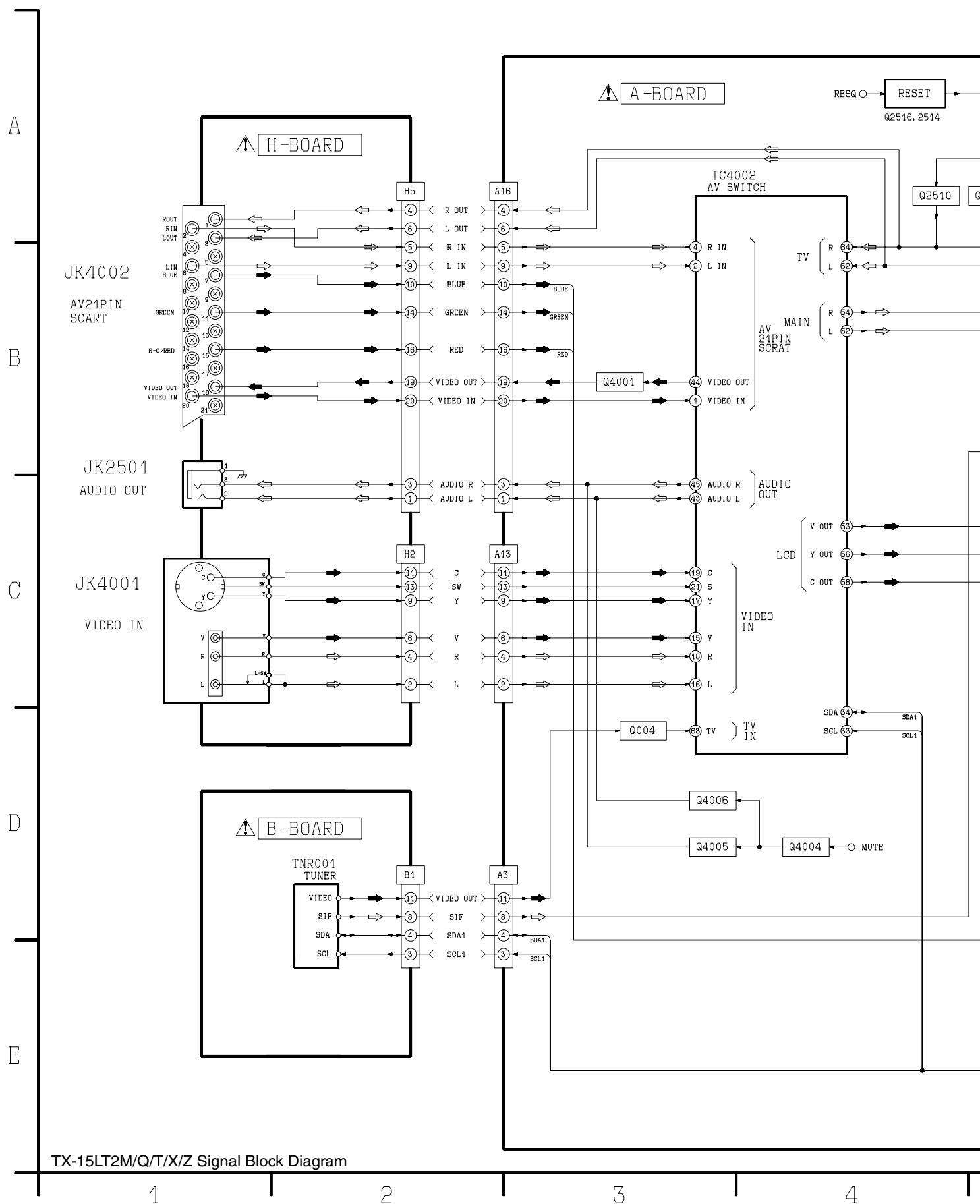
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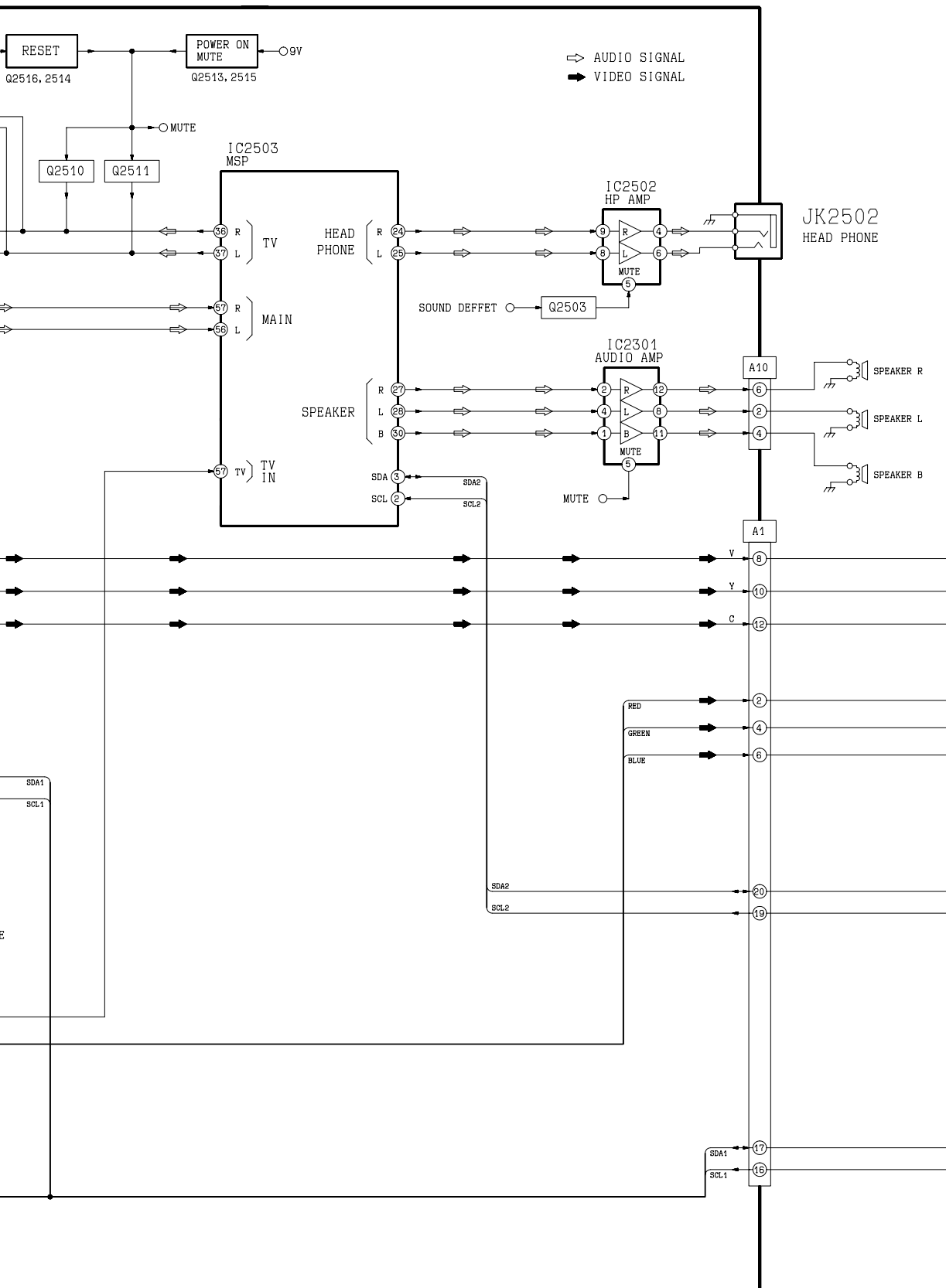
12

13

14

11.3. Signal Block Diagram



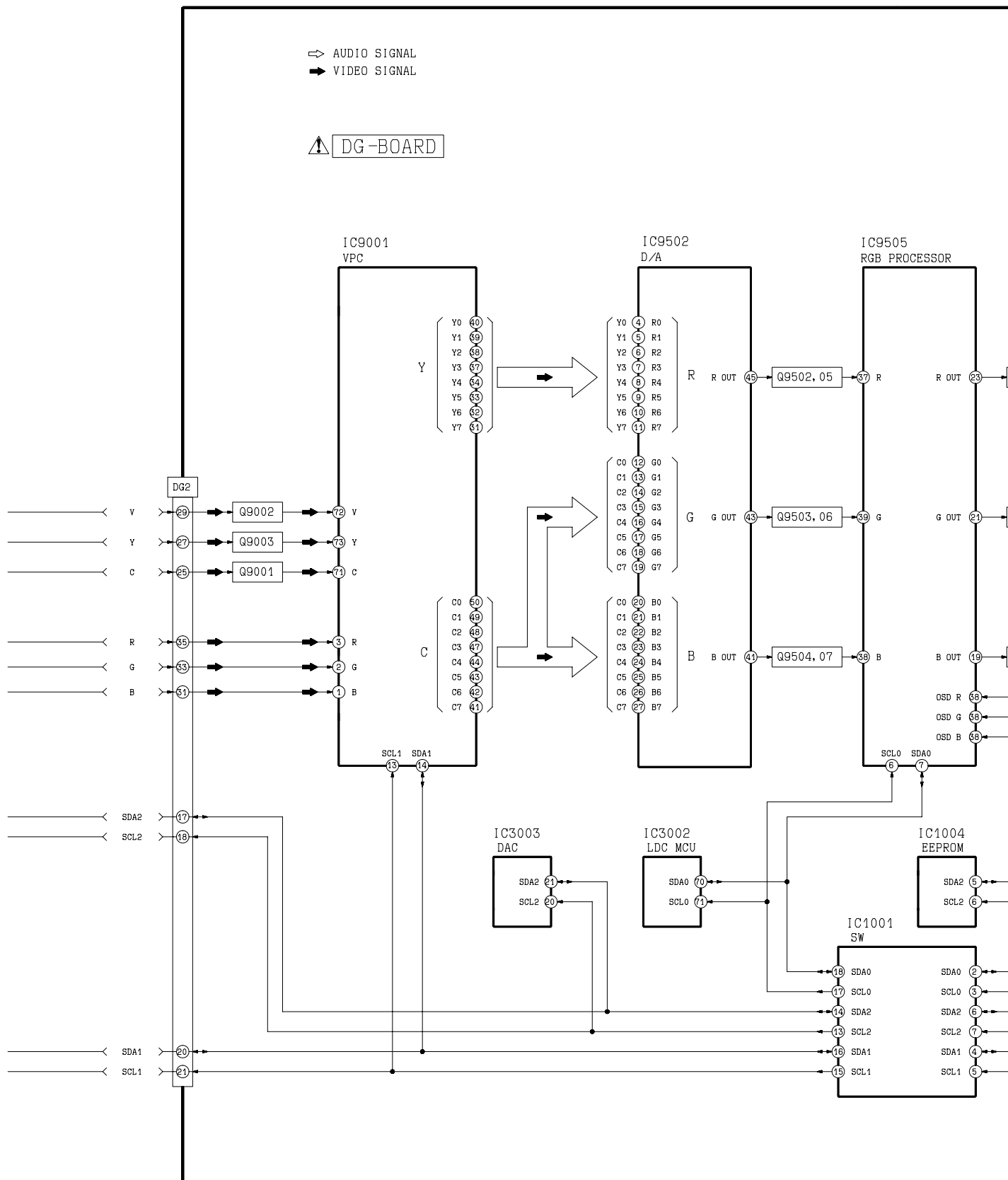


TX-15LT2M/Q/T/X/Z Signal Block Diagram

5

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7



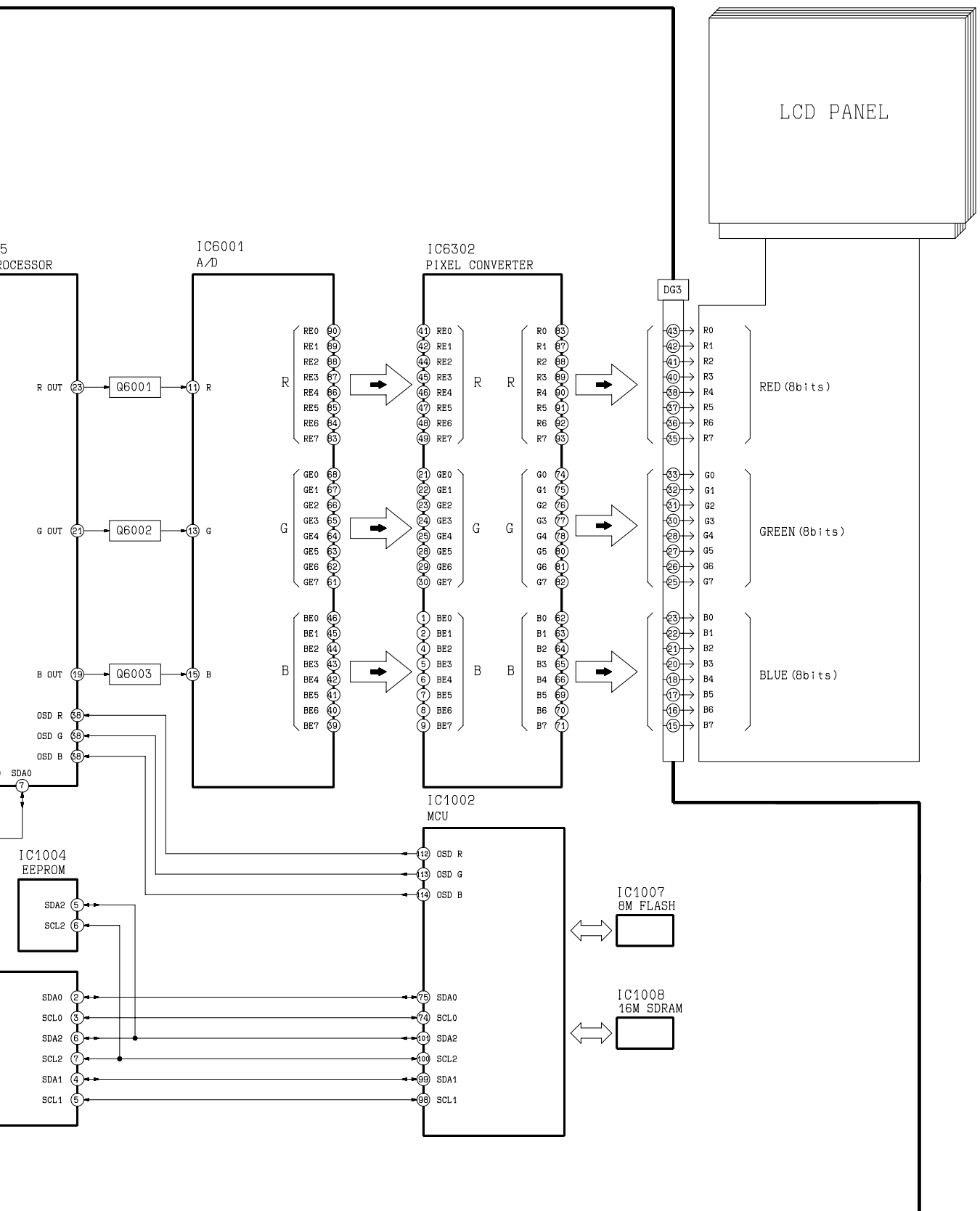
TX-15LT2M/Q/T/X/Z Signal Block Diagram

8

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11



TX-15LT2M/Q/T/X/Z Signal Block Diagram

11

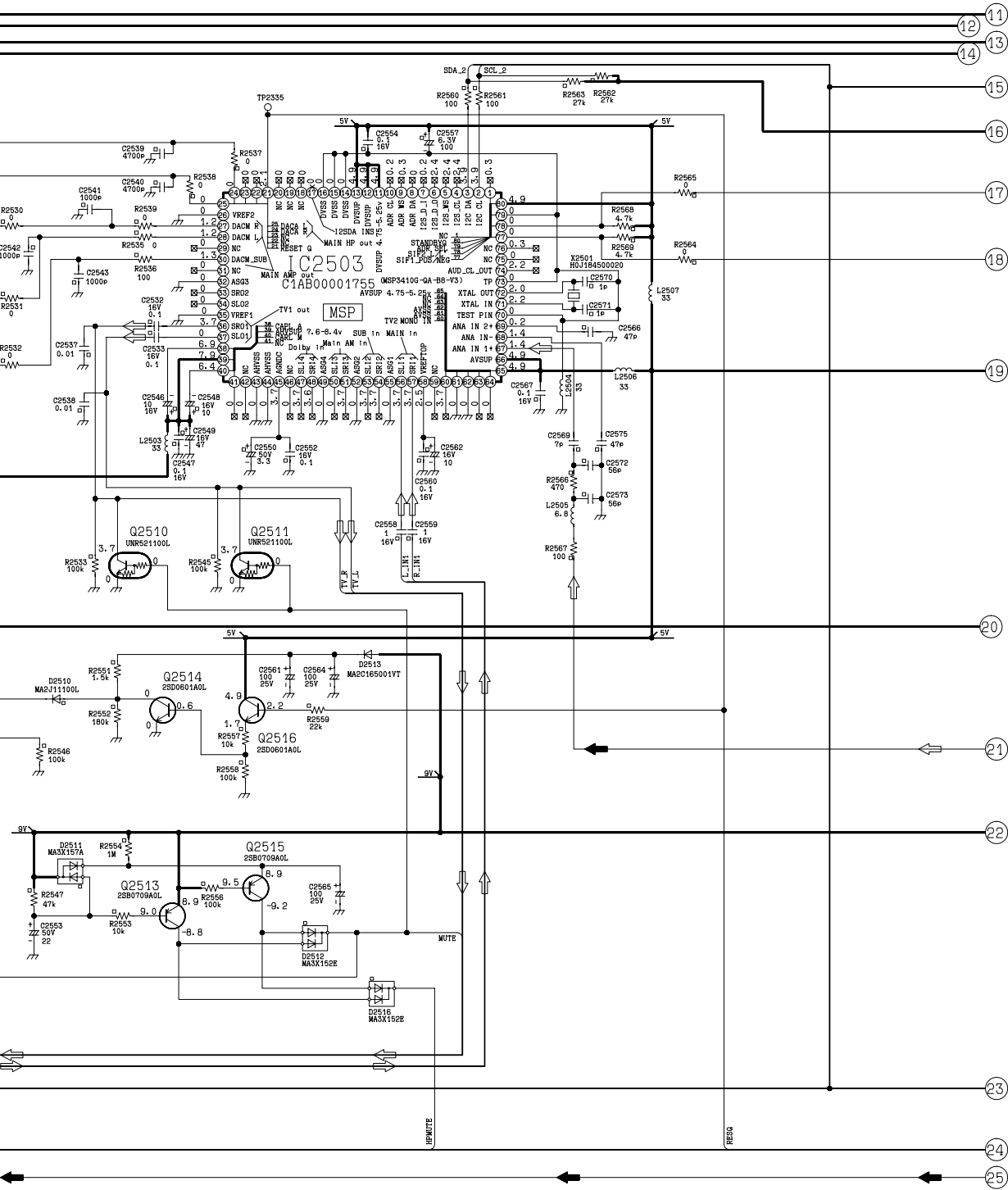
12

13

14

[illegible]





TX-15LT2M/Q/T/X/Z
A-Board (2 of 4) Schematic Diagram

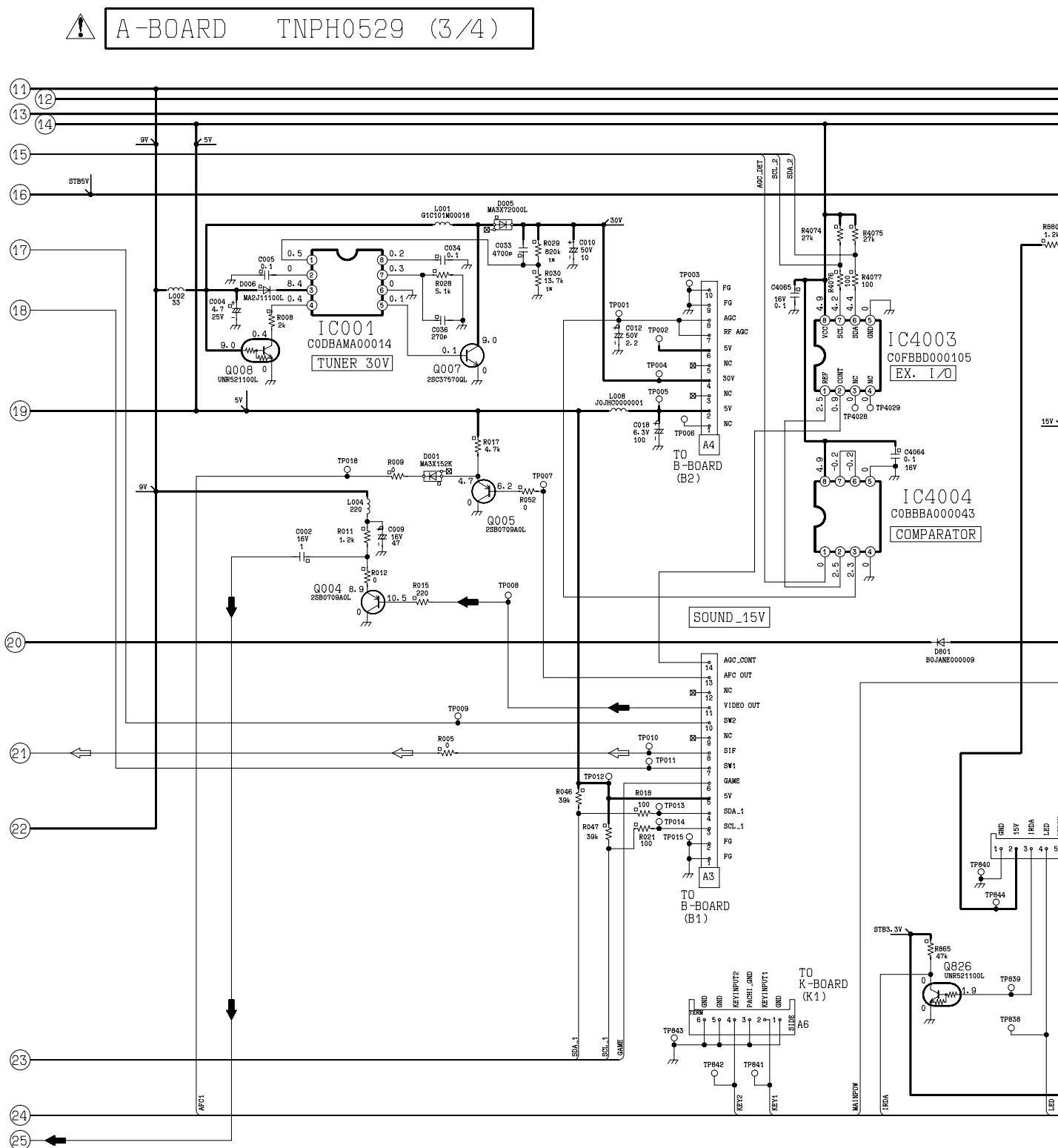
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12

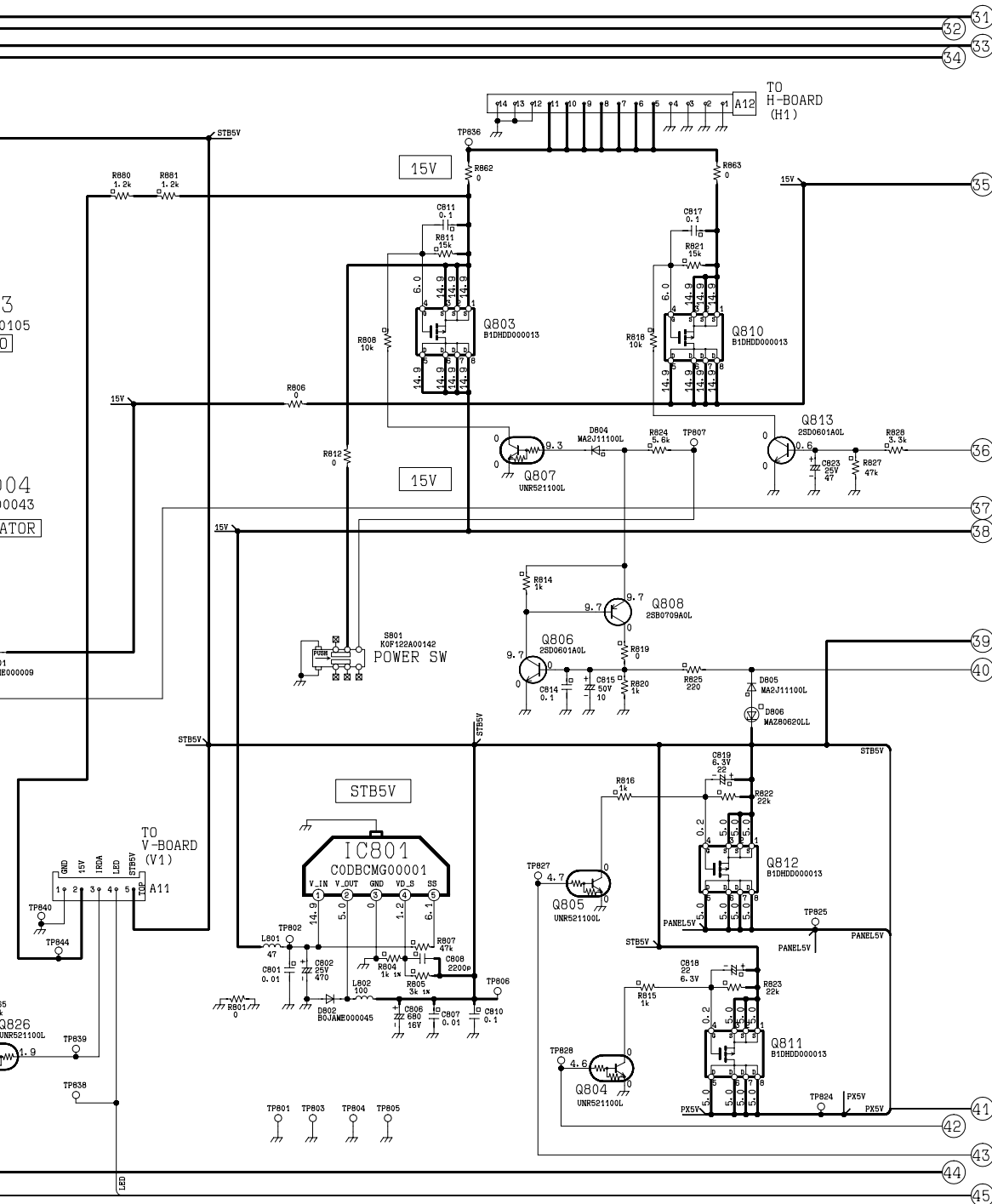
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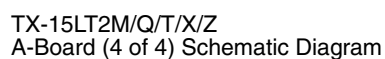
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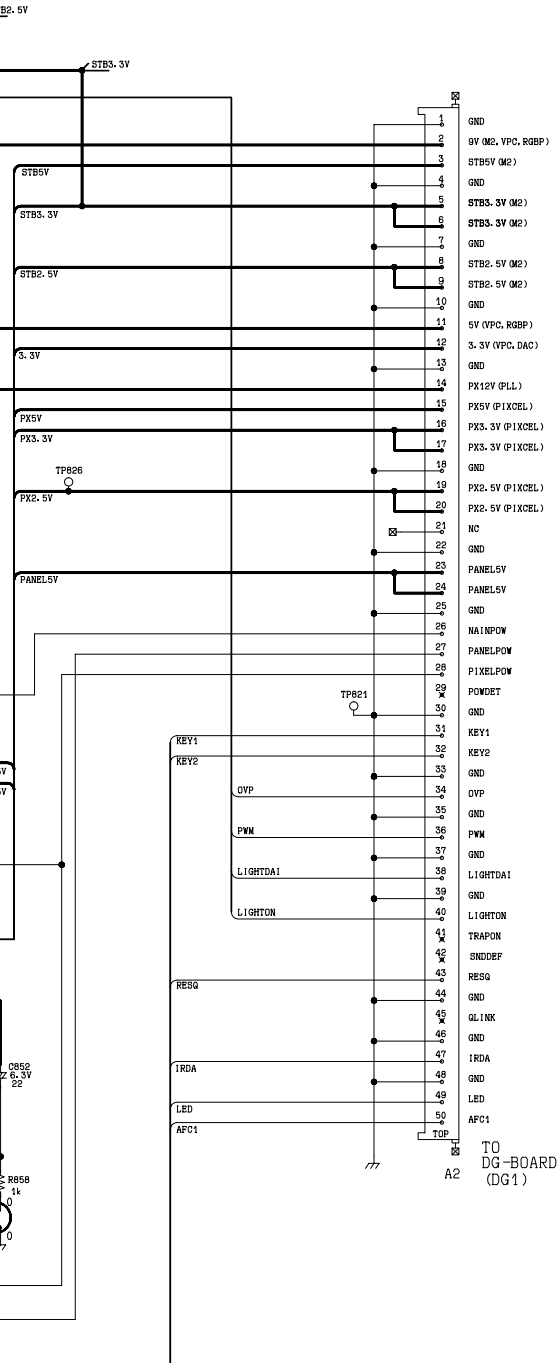
11.6. A-Board (3 of 4) Schematic Diagram



TX-15LT2M/Q/T/X/Z
A-Board (3 of 4) Schematic Diagram

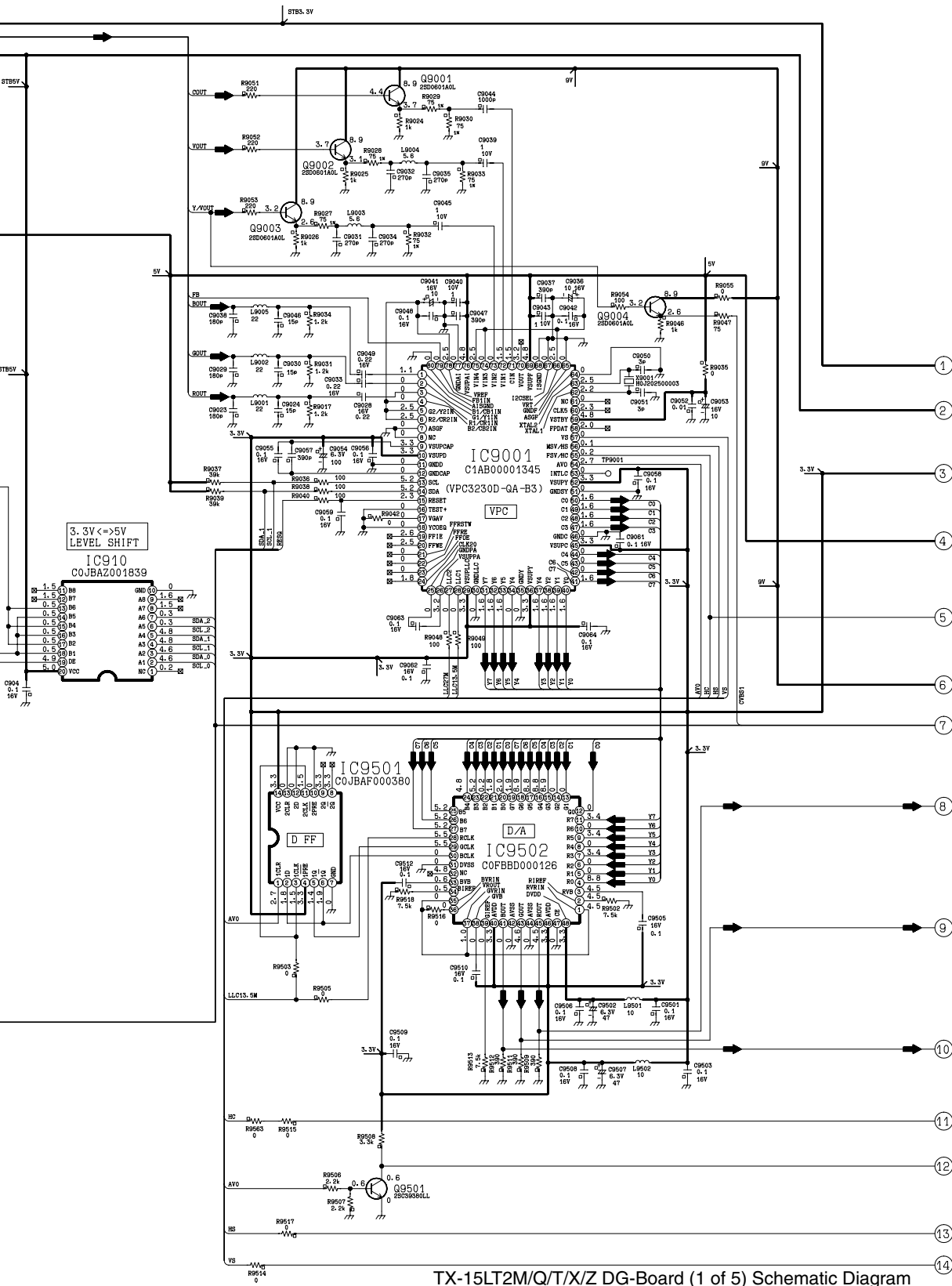






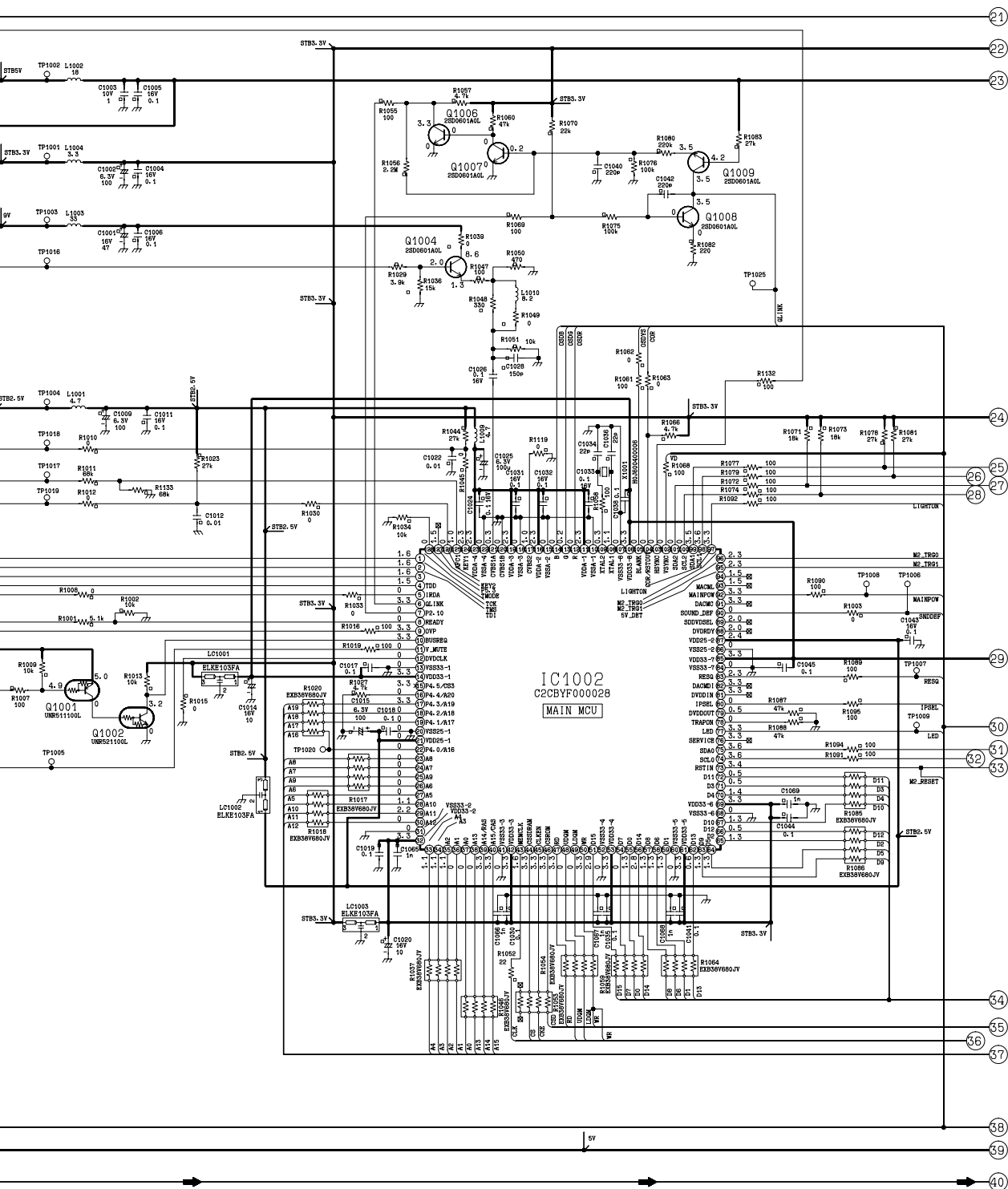
TX-15LT2M/Q/T/X/Z
A-Board (4 of 4) Schematic Diagram







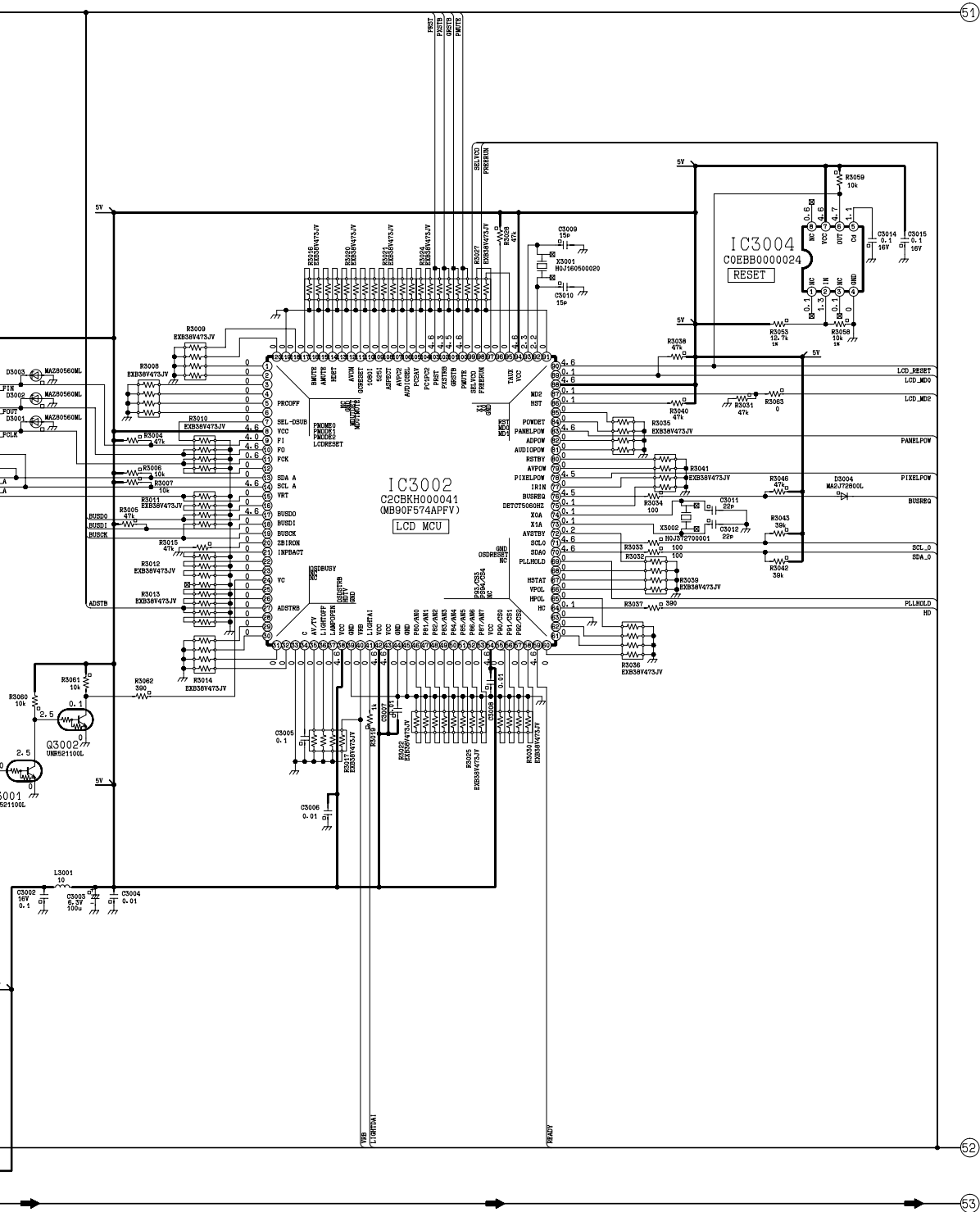
DG-BOARD TXNDG10HGK (2/5)



TX-15LT2M/Q/T/X/Z DG-Board (2 of 5) Schematic Diagram



A horizontal number line with tick marks at 18, 19, 20, 21, and 22.

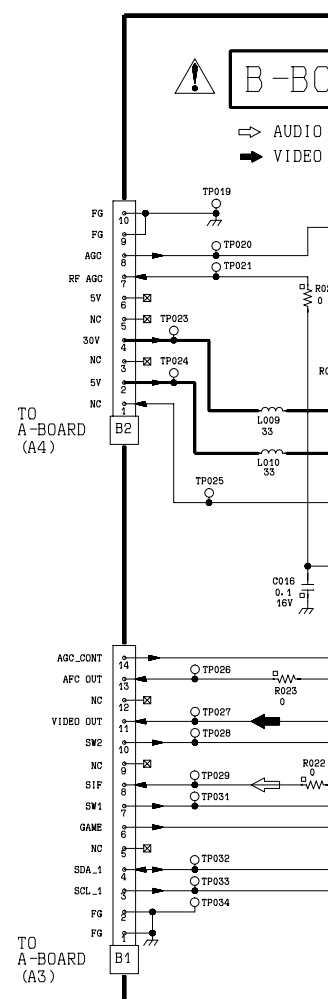


TX-15LT2M/Q/T/X/Z
DG-Board (3 of 5) Schematic Diagram



BE0 [16]
BE1 [17]
BE2 [18]
BE3 [19]
BE4 [20]
BE5 [21]
BE6 [22]
BE7 [23]
GE0 [8]
GE1 [9]
GE2 [10]
GE3 [11]
GE4 [12]
GE5 [13]
GE6 [14]
GE7 [15]
RE0 [0]
RE1 [1]
RE2 [2]
RE3 [3]
RE4 [4]
RE5 [5]
RE6 [6]
RE7 [7]



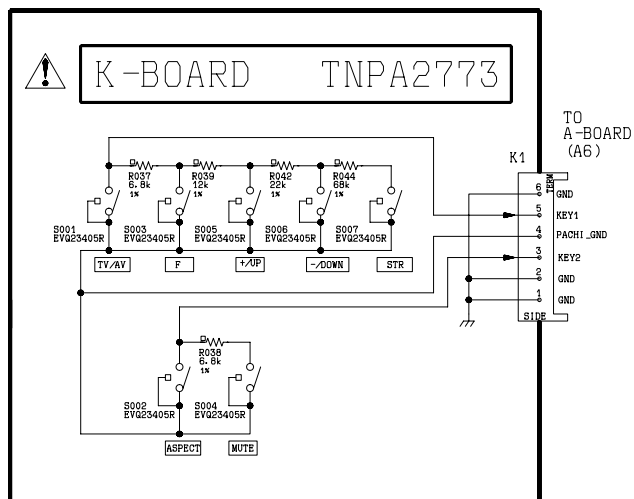
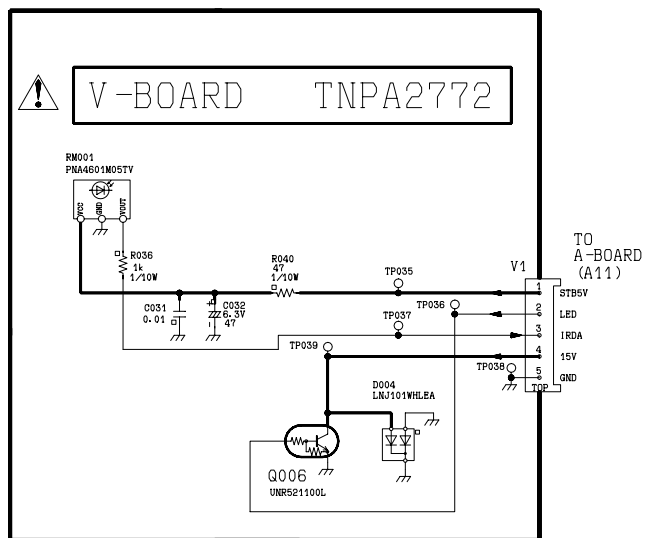
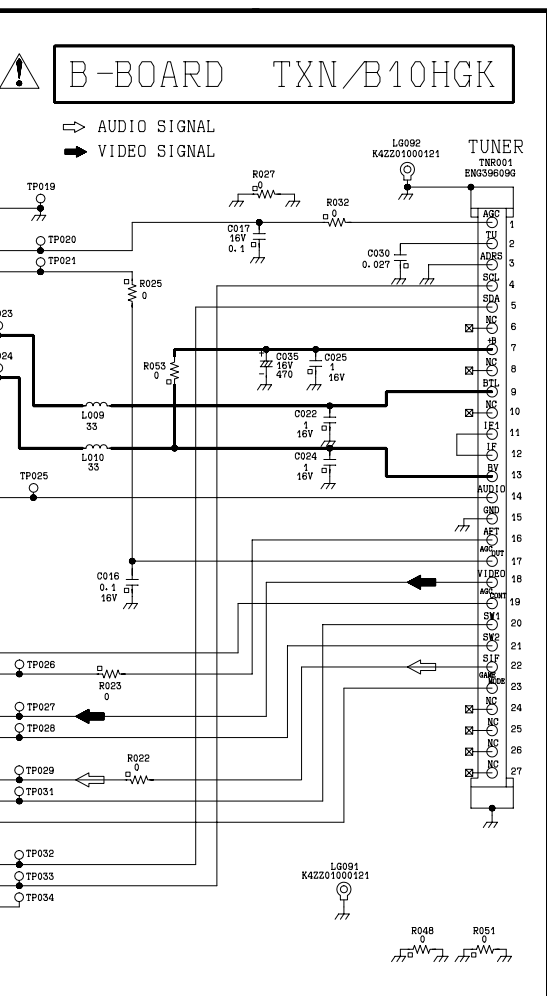


1

2

3

4



TX-15LT2M/Q/T/X/Z B,H,K,and V-Board Schematic Diagram

11.14. P-Board Schematic Diagram

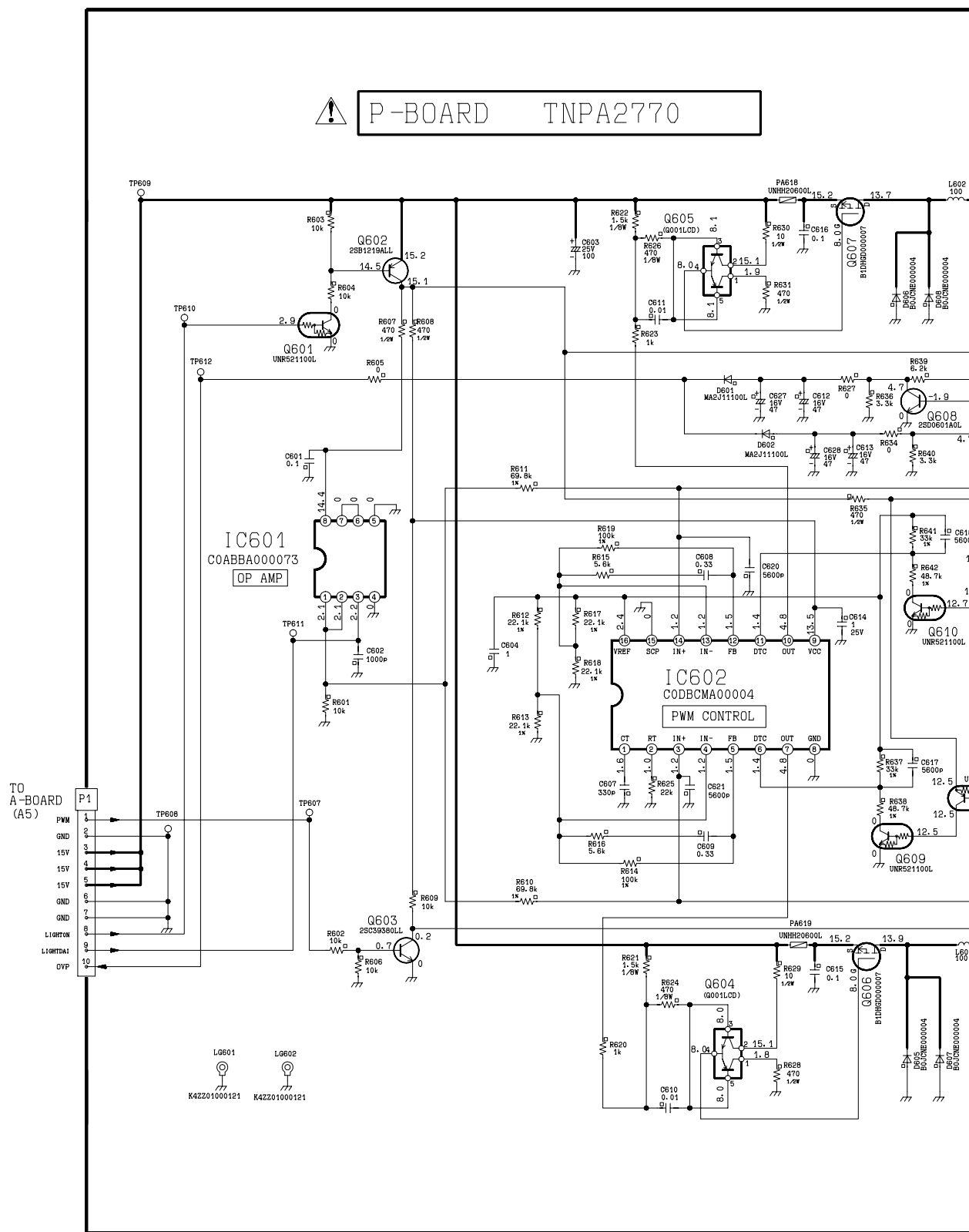
A

B

C

D

E



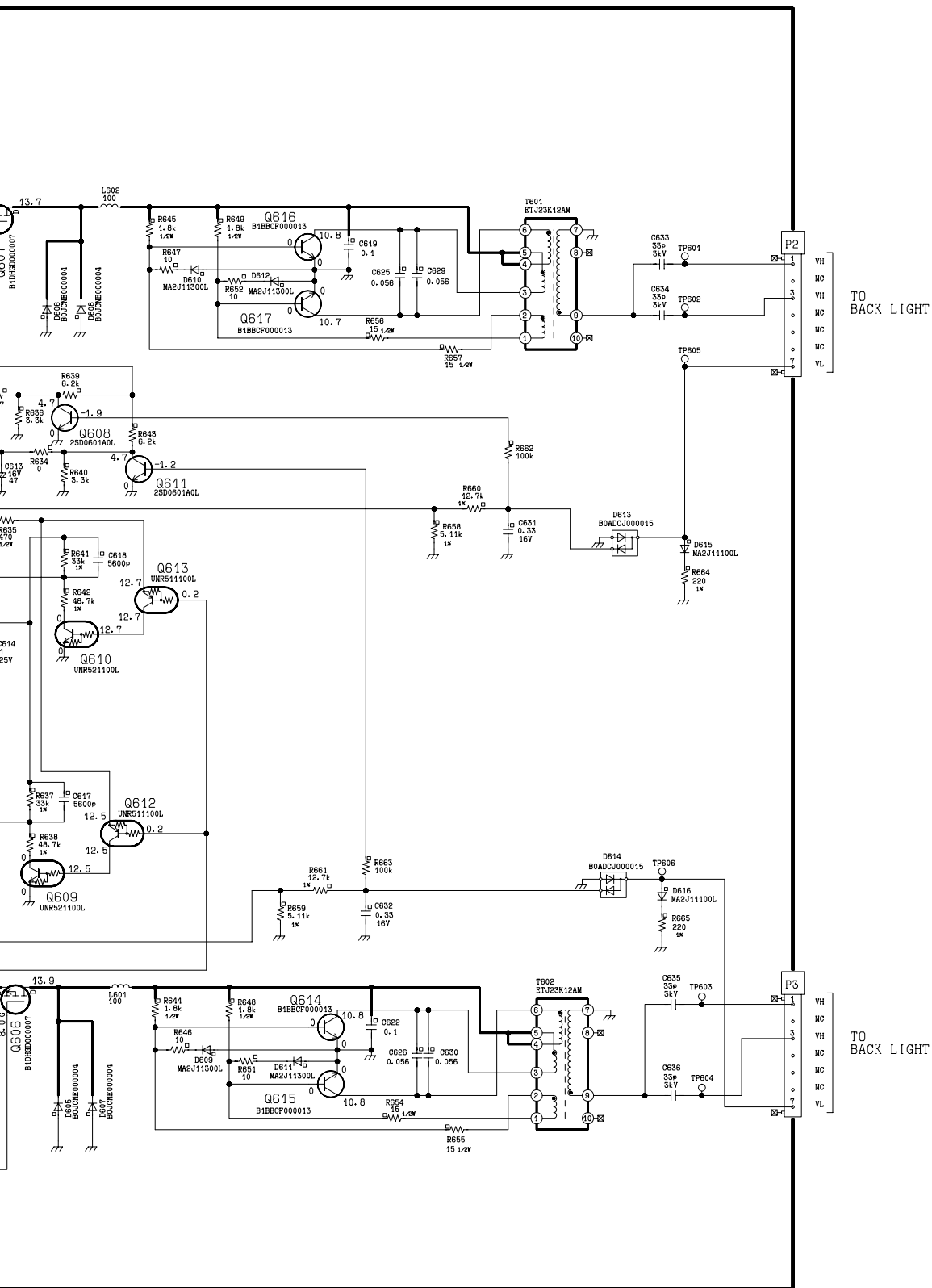
TX-15LT2M/Q/T/X/Z
P-Board Schematic Diagram

1

2

3

4



TX-15LT2M/Q/T/X/Z
P-Board Schematic Diagram

5

6

7

Option Models		M	Q	Z	X	T	Description	
option1		CF						
		b0	1		Colour system		Auto(1)	
		b1	1				SECAM(1)	
		b2	1				NTSC(1)	
		b3	1				M.NTSC(1)	
		b4	0		TV NTSC 50		Reserved	
		b5	0		TV SECAM 60		Reserved	
		b6	1		AV NTSC 50		Reserved	
		b7	1		AV SECAM 60		Reserved	
option2		FF						
		b0	1		CH Plan		ASIA / M.E. / HK / UK / CHINA (1)	
		b1	1				NZ / INDES (1)	
		b2	1				AUSTRALIA (1)	
		b3	1				E. EUROPE (1)	
		b4	1				SPECIAL (1)	
		b5	1				AMERICA (1)	
		b6	1				CATV (1)	
		b7	1				JAPAN (1)	
option3		10						
		b0	0		sub picture		without sub-picture (0), with sub-picture (1)	
		b1	0		2tuner		2 tuner (1), 1 tuner (0)	
		b2	0		VGA		enable (1)	
		b3	0		YUV		enable (1)	
		b4	1		Wide (16:9)		16:9 (1), 4:3 (0)	
		b5	0		HYPER		not use	
		b6	0		SIF		I only(0), BG only(1)	
		b7	0				I/BG/DK/L(2), BG/DK(3)	
option4		E2						
		b0	0		A2 enable		4.5 (1)	
		b1	1				5.5 (1)	
		b2	0				6.0 (1)	
		b3	0				6.5 (1)	
		b4	0		NICAM enable		4.5 (1)	
		b5	1				5.5 (1)	
		b6	1				6.0 (1)	
		b7	1				6.5 (1)	
option5		DE						
		b0	0		A2 select 6.5MHz		5.742 MHz (0), 6.742 MHz	
		b1	1		NICAM priority		ASIA / M.E. (1)	
		b2	1				HK / UK (1)	
		b3	1				CHINA (1)	
		b4	1				NZ / INDN (1)	
		b5	0				AUSTRALIA (1)	
		b6	1				E. EUROPE (1)	
		b7	1				SPECIAL (1)	
option6		C1						
		b0	1		VCR/GAME in search		On (0), Off (1)	
		b1	0		SASO enable		SASO enable (1)	
		b2	0		Noise mute		Noise mute enable(0)	
		b3	0		Monitor out AV1 mute		Monitor out AV1 mute(1)	
		b4	0		AV SW 3/2AV out		set to 0	
		b5	0		Tuner		MACO tuner (0), ALPS tuner (1)	
		b6	1		Child lock		Child lock enable (1)	
		b7	1		TEXT VDEFEAT		VDEFEAT ON (1), OFF (0)	
option7		46						
		b0	0		Power up EC-Mode		Power on EC enable (1)	
		b1	1		CH Blanking		Blanking enable (1)	
		b2	1		AV Blanking		Blanking enable (1)	
		b3	0		Auto WIDE		WSS enable only in aspect Auto (0), WSS always enable (1)	
		b4	0		Volume correction		TV Volume correction enable (1)	
		b5	0		AVLink		Q-Link on/off selectable in menu (1)	
		b6	1		MPX/NICAM display		Display NICAM (0), Display MPX (1)	
		b7	0		free			

Option Models		M	Q	Z	X	T	Description	
option8		51	D0	51				
	b0	1	0			1	Teletext CH Refresh	Enable(1)
	b1	0	0			0	Geomagnetic Sensor	set to 0
	b2	0	0			0	Geomagnetic Polarity	set to 0
	b3	0	0			0	RF Attenuation	Enable(1)
	b4	1	1			1	Fine tuning	Enable(1)
	b5	0	0			0	Search speed	Slow(1) Fast(0)
	b6	1	1			1	TEXT FLOF	Reserved
	b7	0	1			0	TEXT TOP	TOP enable (1)
option9		80						
	b0					0	free	
	b1					0	free	
	b2					0	free	
	b3					0	free	
	b4					0	free	
	b5					0	Surround SP polarity	set to 0
	b6					0	Volume curve	Volume curve1(0), curve2(1)
	b7					1	Volume EXDAC	Add Volume
option10		89		83	85			
	b0			1		1	OSD language	English Only enable (1) : Top Priority
	b1			0		1		Arabic enable (1)
	b2			0		0		Russian enable (1)
	b3			1		0		Chinese enable (1)
	b4			0		0	Blue Back	enable(0)
	b5			0		0	free	
	b6			0		0	free	
	b7			1		1	OVP	set to 1
option11		0A						
	b0					0	Shop mode	enable(1)
	b1					0	Full / 16:9 display	Reserved
	b2					0	Sub Headphone	enable (1)
	b3					1	Scan mode Blanking	Blanking enable (1)
	b4					0	User aspect 14:9	enable (1)
	b5					1	NICAM C4 bit	enable (1)
	b6					0	ID-1	enable (1)
	b7					1	1080i	enable (1)
option12		41	43	41			Area Option	
	b0	1	1			1	Asia	Asia (1), europe (0)
	b1	0	1			0	Australia	Australia (1)
	b2	0	0			0	Ireland	Ireland(1)
	b3	0	0			0	UK	UK(1)
	b4	0	0			0	MELCOA	MELCOA (1)
	b5	0	0			0	28 inch	Reserved for 28 inch etc.
	b6	1	1			1	Large size	set to 1
	b7	0	0			0	PTV	set to 0
option13		4A					Temporary	
	b0					0	VDU Version	A21 (0), A12(1)
	b1					1	GC Version	ES5 (0), ES6 (1)
	b2					0	UV Swap	Swap (1)
	b3					1	TEXT	Enable (1)
	b4					0	LT2 22inch	22inch (1), 15inch (0)
	b5					0	free	
	b6					1	Picture Shift	set to 1
	b7					0	CIP2	without CIP1 (0), with CIP (1)

Important Safety Notice

Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.

Notes:

1. Resistor

All resistors are cabon 1/4W resistor, unless marked as follows:

Unit of resistance is OHM [W] (K=1,000, M=1,000,000).

$\bigcirc$	: Nonflammable	$\boxtimes$	: Metal Oxide
$\triangle$	: Solid	$\odot$	: Metal Film
$\boxplus$	: Wire Wound	$\otimes$	: Fuse:

2. Capacitor

All capacitors are ceramic 50V capacitor, unless marked as follows:

Unit of capacitance is mF, unless otherwise noted.

$\otimes$	: Temperature Compensation	$\begin{array}{c} + \\ \text{---} \text{ } \text{---} \\ \text{NP} \end{array}$	: Electrolytic
$\textcircled{M}$	: Polyester	$\begin{array}{c} \text{---} \text{ } \text{---} \\ \text{NP} \end{array}$	: Bipolar
$\textcircled{m}$	: Metalized Polyester	$\textcircled{T}$	: Dipped Tantalum
$\boxtimes$	: Polypropylene	$\textcircled{Z}$	: Z-Type

3. Coil

Unit of inductance is mF, unless otherwise noted.

4. Test Point

$\bigcirc$: Test Point position

5. Earth Symbol

$\text{---} \text{||} \text{---}$: Chassis Earth (Cold) $\downarrow$: Line Earth (Hot)

6. Voltage Measurement

Voltage is measured by a DC voltmeter.

Conditions of the measurement are the following:

Power Source AC 100-240V, 50/60Hz

Receiving Signal Colour Bar signal (RF)

All customer's controls Maximum positions

7. Number in red circle indicates waveform number.

(See waveform pattern table.)

8. When arrow mark ($\nearrow$) is found, connection is easily found from the direction of arrow

9. Indicates the major signal flow. : Video $\Rightarrow$ Audio $\Rightarrow$

10. This schematic diagram is the latest at the time of printing and subject to change without notice.

A

B

C

D

E

JK801
<DC 15V IN>
FROM AC ADAPTER

H-BOARD

V-BOARD

P-BOARD

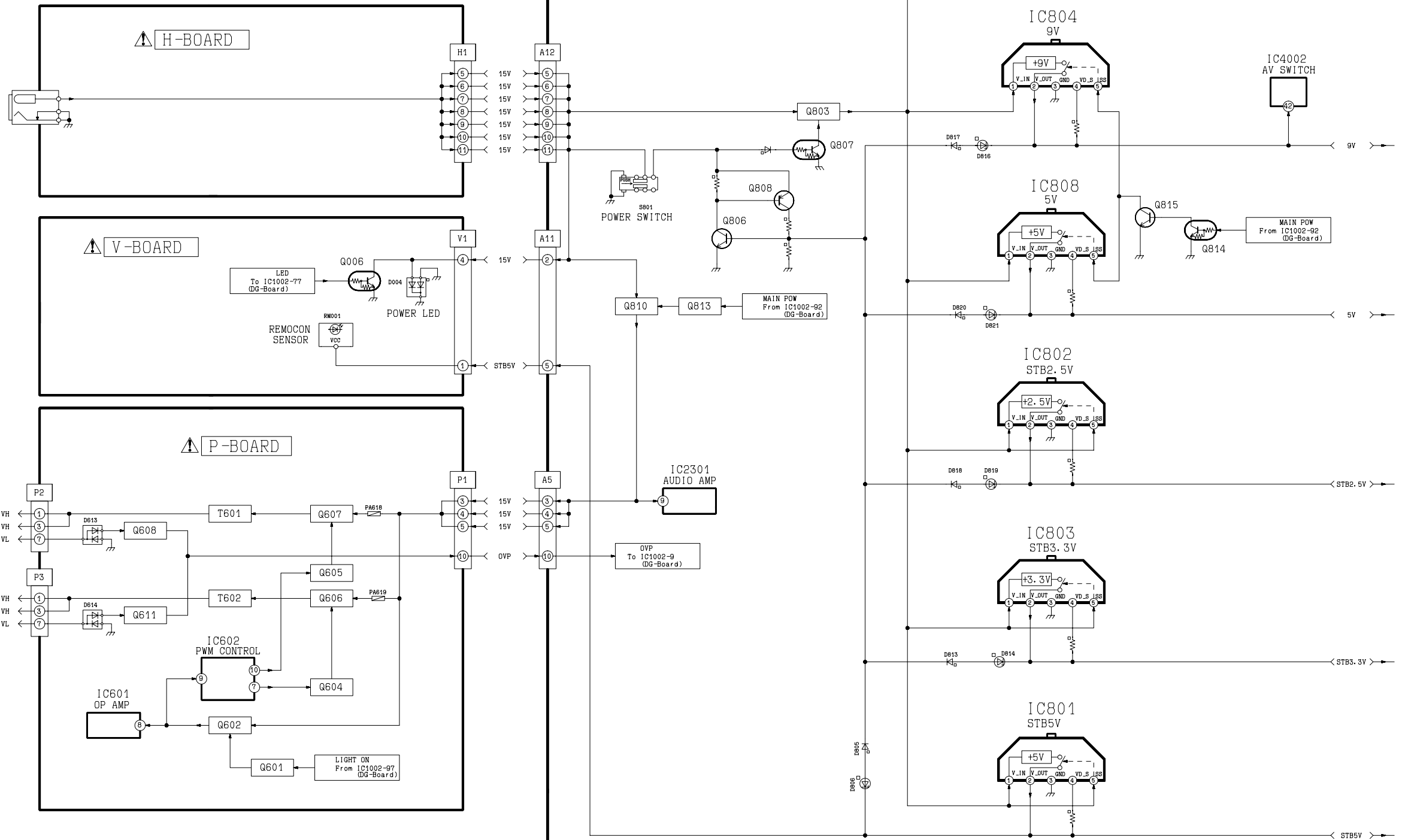
A-BOARD

TO
BACK LIGHT
VH
VH
VL

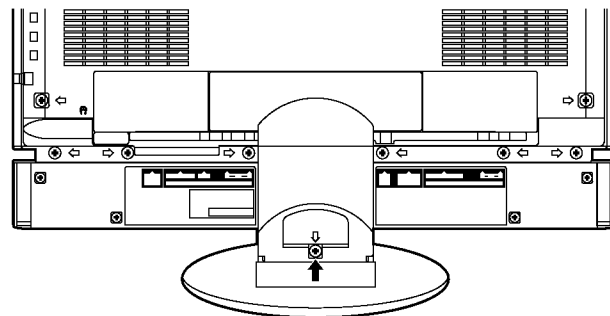
TO
BACK LIGHT
VH
VH
VL

TX-15LT2M/Q/T/X/Z Power Block Diagram

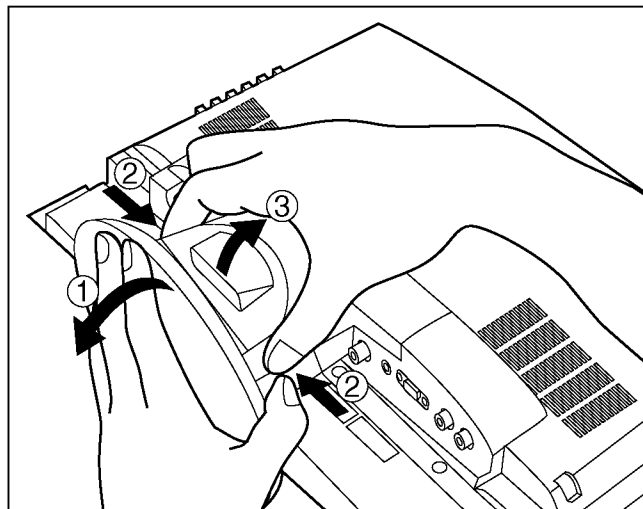
TX-15LT2M/Q/T/X/Z Power Block Diagram



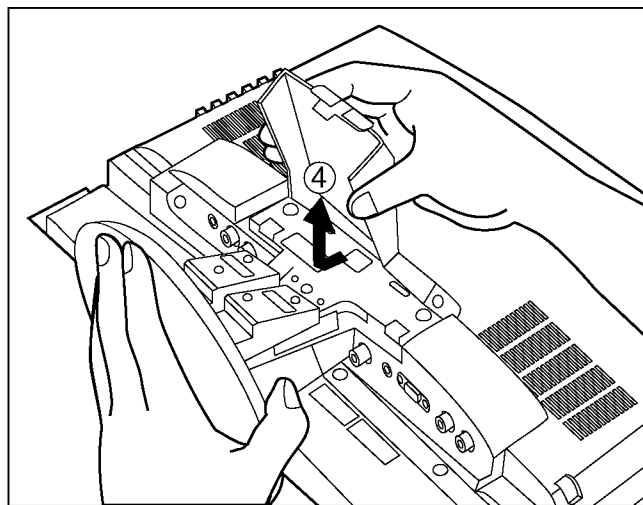
(1) Remove the fixing screw (1pce).



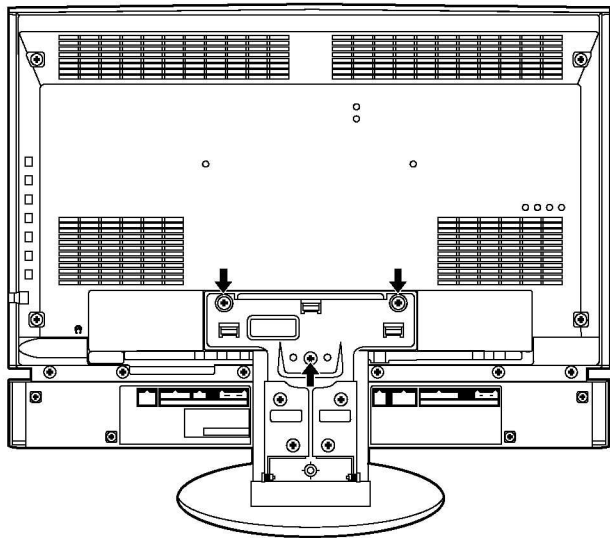
(2) As shown in the figure, slant the tilt base toward (1). While holding lower part of the tilt cover (rear), lift it up in such a way as to turn it with its upper part as a pivot.
* Lay down the LCD panel to face downward.



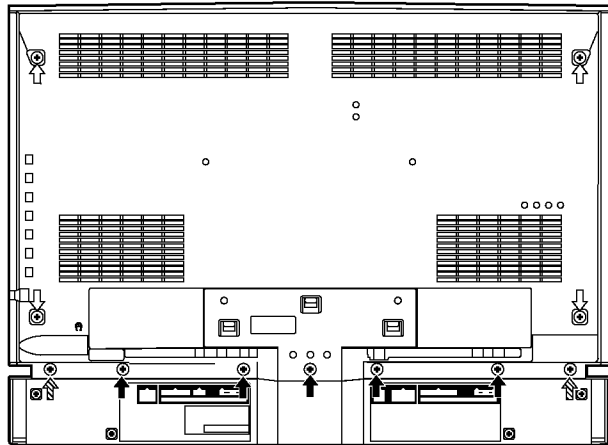
(3) As shown in the figure, remove the tilt cover (rear) while disengaging the hook on its upper part.



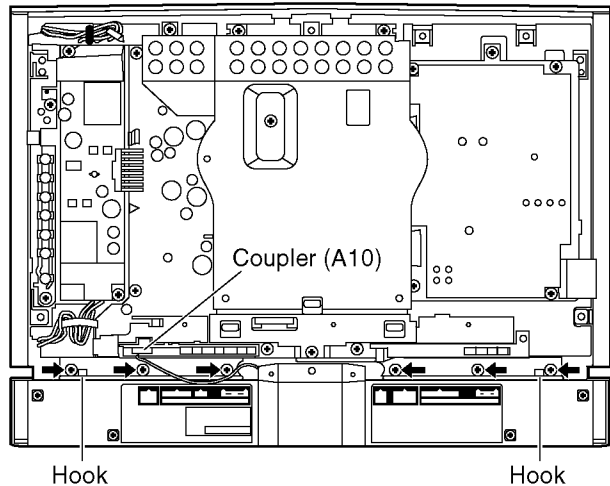
- (4) Remove the fixing screws (3pcs), and detach the tilt base.



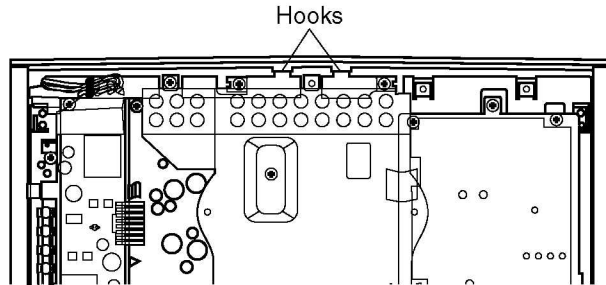
- (1) Remove the tilt base. (See 5.1.)
- (2) Remove the fixing screws (4pcs).
- (3) Remove the fixing screws (2pcs).
- (4) Remove the fixing screws (5pcs).
- (5) Detach the rear panel.



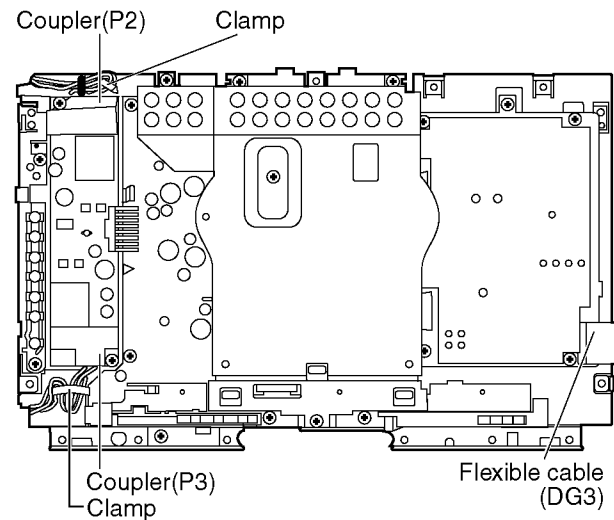
- (1) Remove the rear panel. (See 5.2.)
- (2) Remove the fixing screws (6pcs).
- (3) Disconnect the coupler (A10).
- (4) Lift the chassis to disengage the hooks (2 locations), and remove the speaker unit.



- (1) Remove the speaker unit. (See 5.3.)
 - (2) Remove the chassis and the LCD panel while disengaging the hooks (2 locations).
(The front panel remains.)
- * Be careful not to mar the LCD panel.

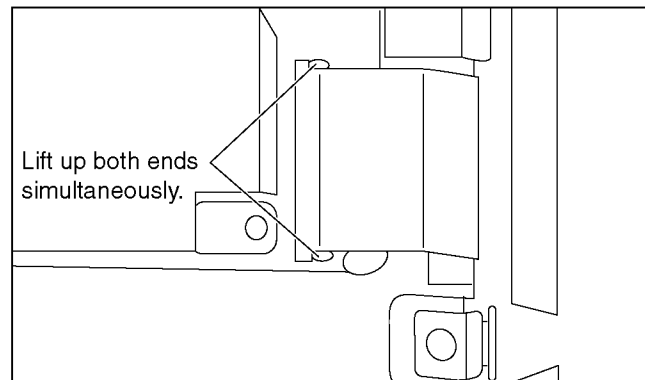


- (1) Remove the chassis and the LCD panel. (See 5.4.)
- (2) Disconnect the couplers (2 locations) and the flexible cable.
- * When disconnecting the flexible cable from the LCD panel, see the information below for your reference.
- * Disconnect the coupler cable from the clamp (2 locations).
- (3) Remove the chassis. (The LCD panel remains.)



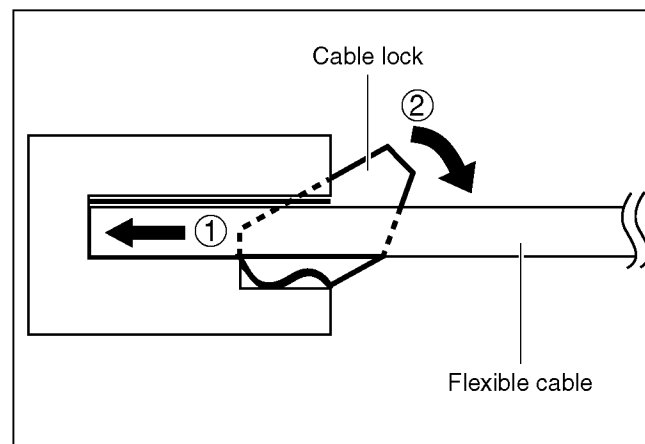
* Reference

To release the cable lock (brown colored) of the coupler, lift its both ends simultaneously. (Once DG3 flexible cable is disconnected, the cable lock tends to detach from the coupler easily. Due precaution should be paid on it.)

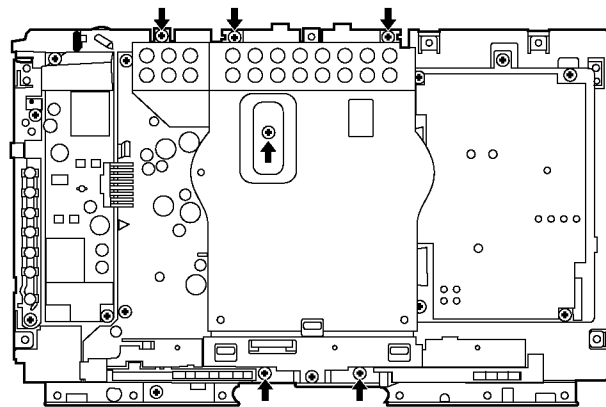


* Reference

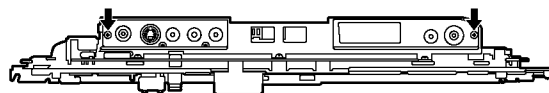
When connecting the flexible cable to the coupler, mount the cable lock on the coupler and insert the cable into the coupler over the cable lock. Then push down both ends of the cable lock until its upper face is positioned flat to lock the cable.



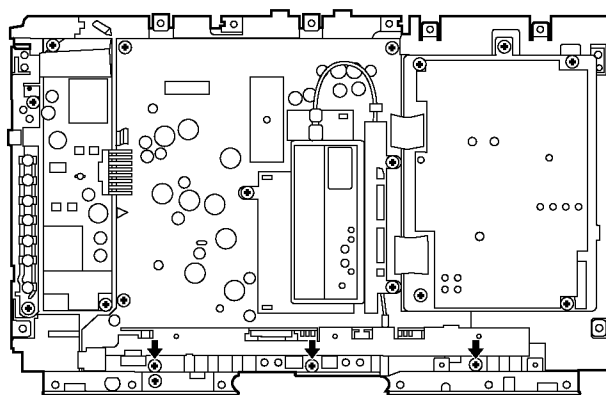
- (1) Remove the chassis. (See 5.5.)
- (2) Remove the fixing screws (6pcs), and detach the main shield.



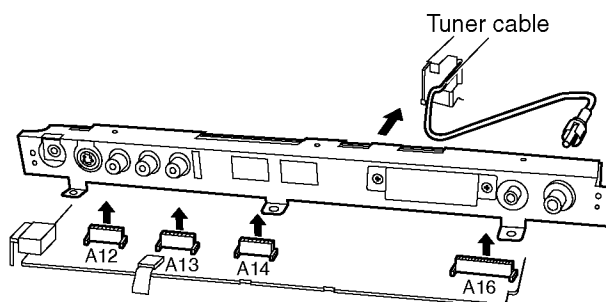
- (3) Remove the fixing screw (1pce each for right and left), and dismount the terminal covers (both right and left).



- (4) Remove the fixing screws (3pcs).

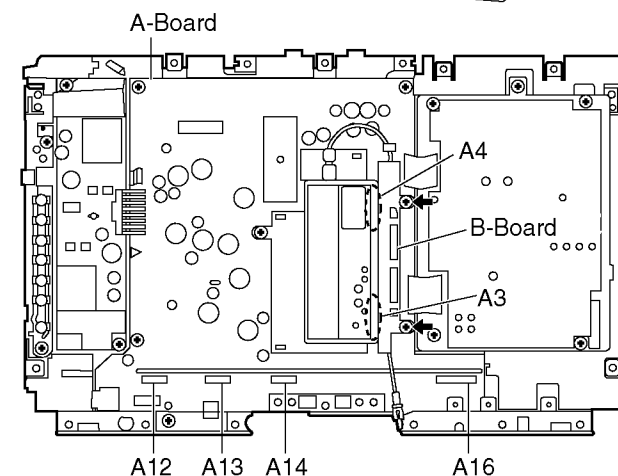


- (5) Lift the terminal block to remove while disconnecting the couplers (A12, A13, A14 and A16) between the terminal block and the A-Board.
* Caution: Do not apply excessive force when disconnecting the couplers to prevent damage to the PCB.

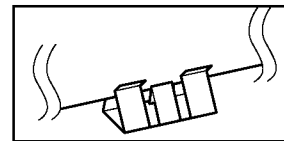
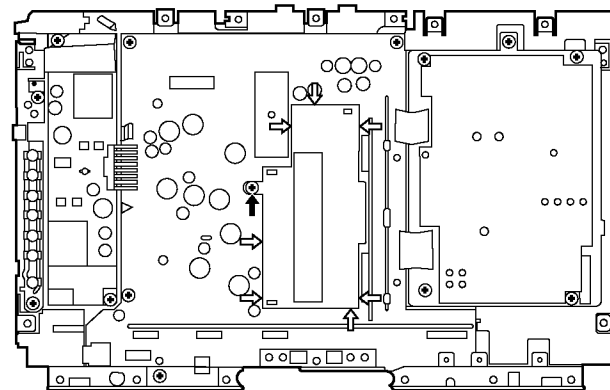


- (6) Disconnect the cable tied to the antenna terminal (rear side) of the terminal block, and remove the terminal block.

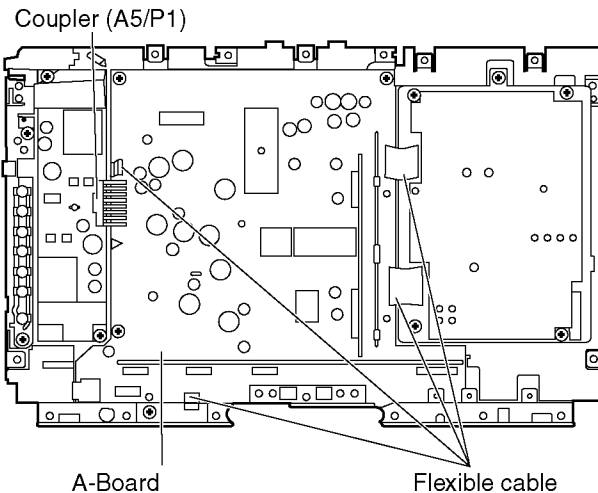
- (7) Remove the fixing screws (2pcs). Disconnect the couplers (A3 and A4) between B-Board and the main A-Board. Then dismount the B-Board (with tuner assembly) from the A-Board.
* Caution: Do not apply excessive force when disconnecting the couplers to prevent damage to the PCB.



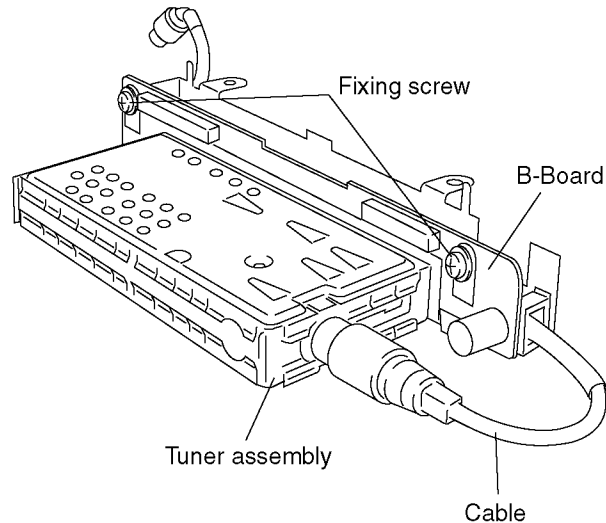
- (8) Remove the fixing screw (1pce). Detach the shield while disengaging the shield clips (7 locations).



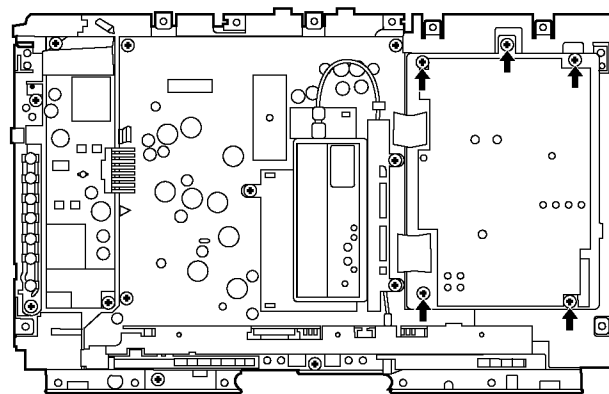
- (9) Lift up the coupler (A5) by holding its projection to remove it (from P1).
- (10) Disconnect the flexible cables (4 locations).
- * When disconnecting, pull out the cable straight (at right angle to the coupler).



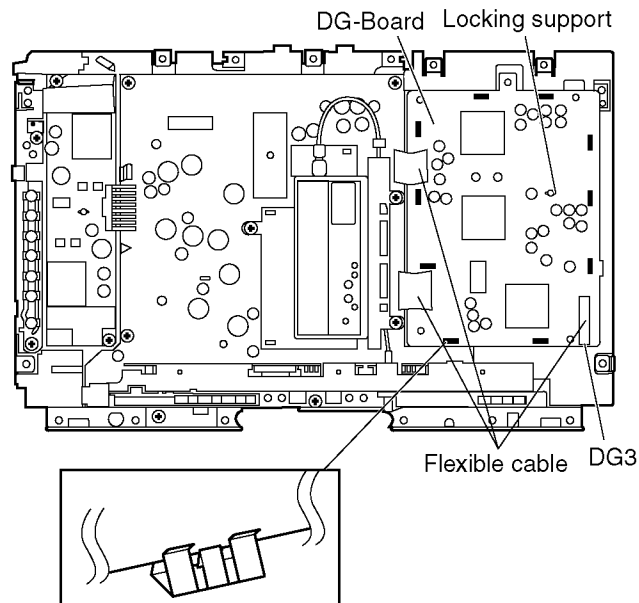
- (1) Disconnect the B-Board (with tuner assembly) with metal fitting. (See 5.6. procedures 1-2 and 6-7.)
- (2) Remove the fixing screws (2pcs), and separate the B-Board (with tuner assembly).



- (1) Remove the rear panel. (See 5.2.)
- (2) Detach the main shield. (See 5.6, procedure 2.)
- (3) Remove the fixing screws (5pcs), and release the shield case stoppers at 10 locations to detach the shield.
 - * When mounting, insert it matching the projection for positioning.
 - * The illustration shows the state after chassis removal.

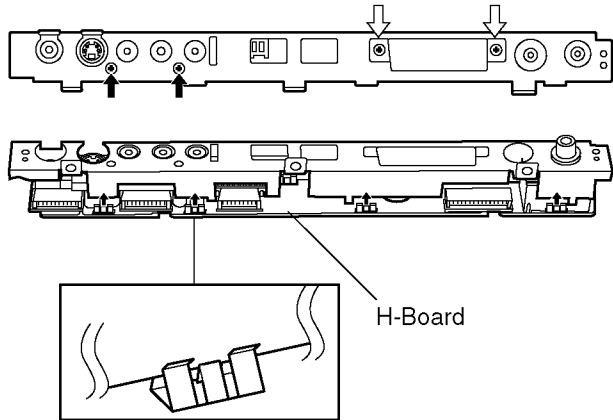


- (4) Remove the flexible cables (3 locations).
 - * As the illustration shows the state after chassis removal, the flexible cable from the LCD panel is already disconnected.
 - When disconnecting or reconnecting the flexible cable (DG3), see the reference in 5.5.
 - When disconnecting the flexible cable from the A-Board PCB or reconnecting to it, pull out or insert the cable straight (at right angle) to the coupler.
- (5) Unlock the locking support and remove the DG-Board.

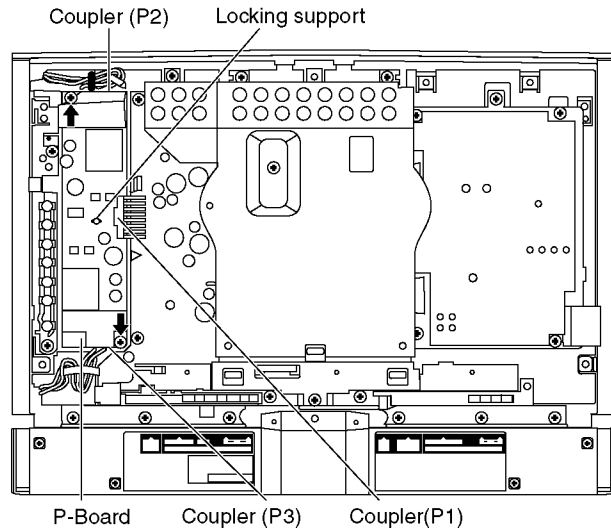


- (1) Remove the terminal block. (See 5.6. procedures 1-6.)
- (2) Remove the fixing screws (4pcs) and dismount H-Board.

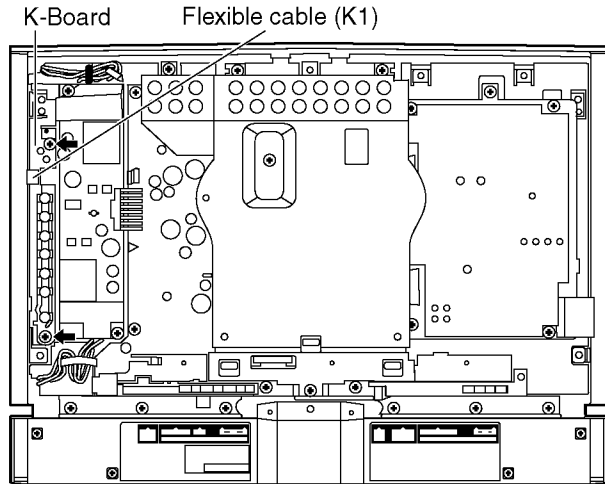
* When mounting, match the terminal block metal fitting and the PCB shield clips (6 locations).



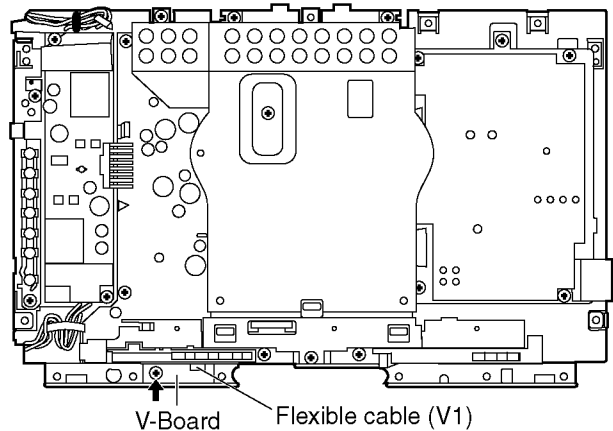
- (1) Remove the rear panel. (See 5.2.)
- (2) Disconnect the couplers (P2, P3 and P1).
- (3) Remove the fixing screws (2pcs).
- (4) Unlock the locking support and dismount P-Board.



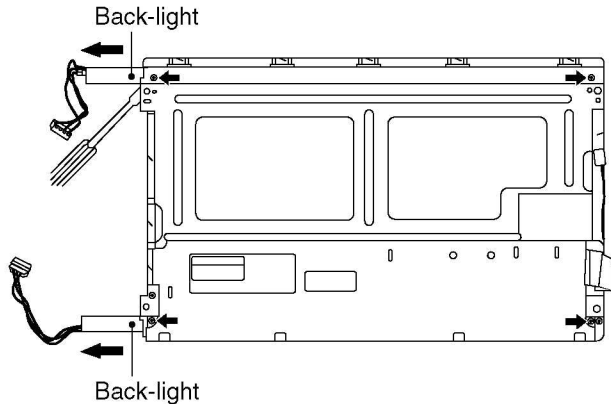
- (1) Remove the rear panel. (See 5.2.)
 - (2) Remove the fixing screws (2pcs).
 - (3) Disconnect the flexible cable (1 location) and dismount K-Board.
- * Pull out the flexible cable straight to the coupler.



- (1) Remove the rear panel. (See 5.2.)
- (2) Remove the fixing screw (1pce).
* The illustration shows the state after chassis removal.
- (3) Remove the chassis. (The LCD panel remains.)
* Pull out the flexible cable straight to the coupler.



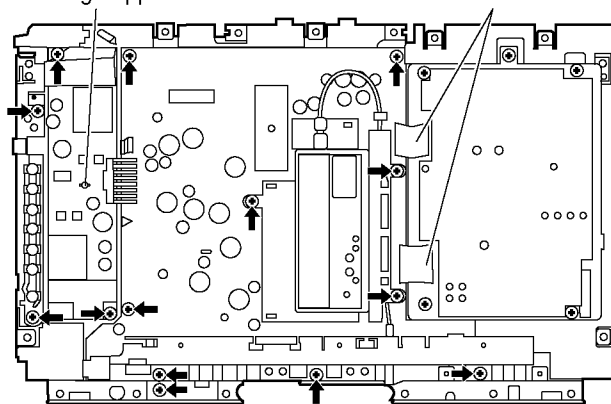
- (1) Remove the LCD panel. (See 5.5.)
 - (2) Remove the fixing screws (4pcs).
 - (3) While lifting upper (or lower) part of the shield a little with a screwdriver, pull out the back-light slowly.
- * When replacing the back-light, make sure to replace both upper and lower back-lights same time.



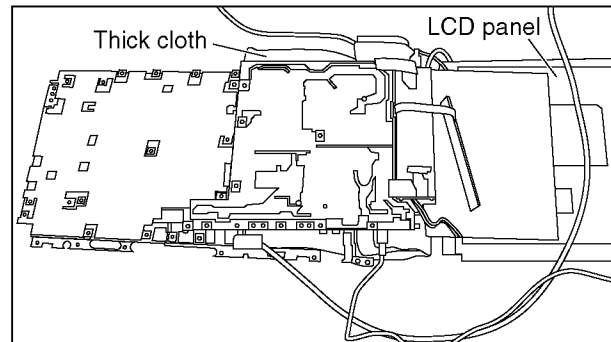
- (1) Remove the chassis, the main shield and the terminal covers (right and left). (See 5.1 ~ 5.6. procedure 3.)

Locking support

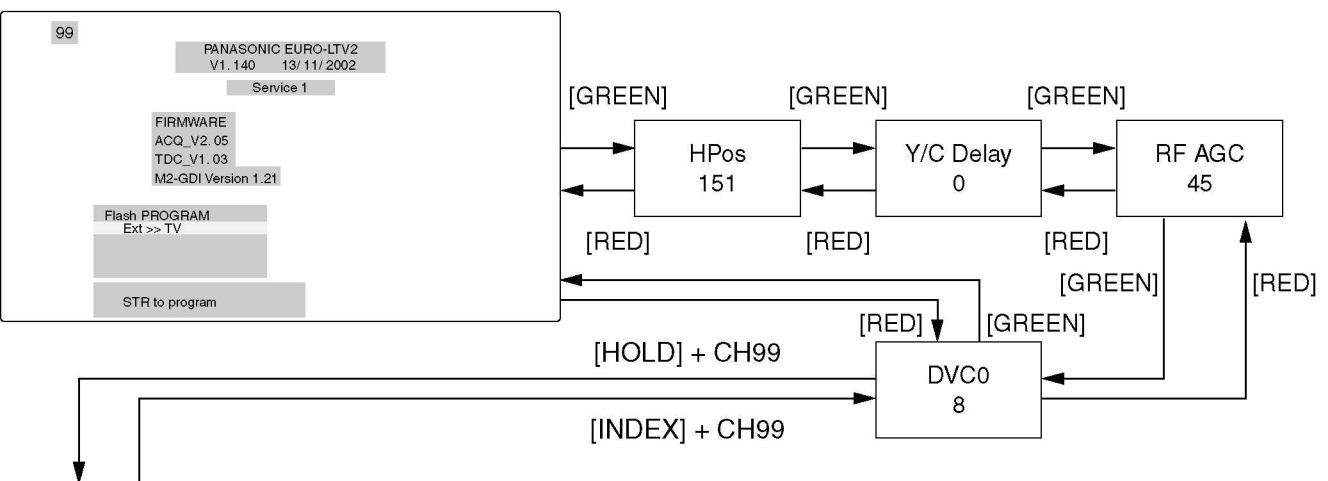
Flexible cable



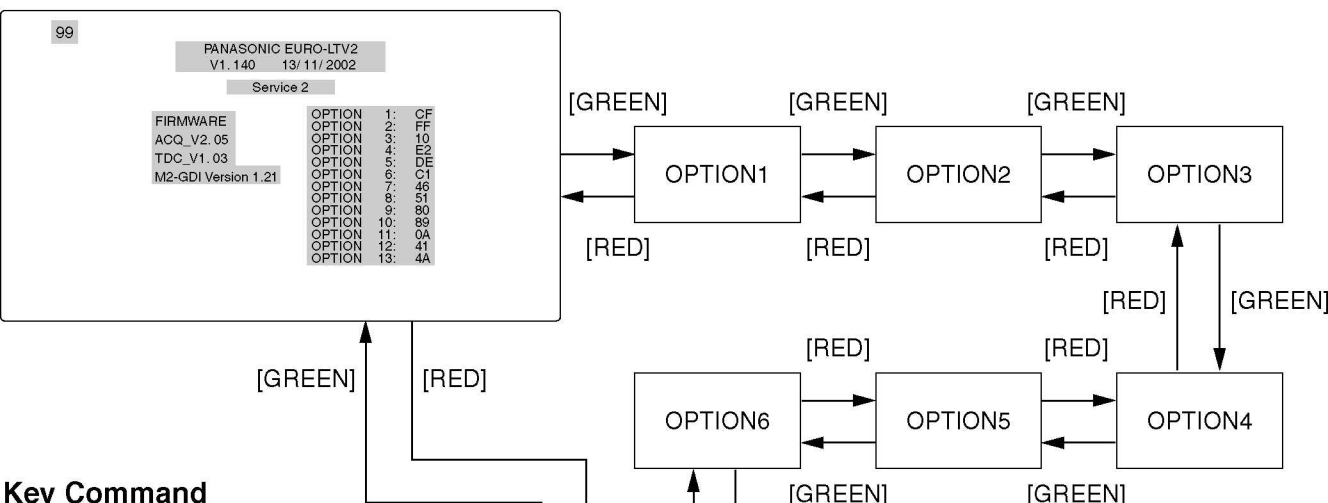
- (2) Remove the fixing screws (14pcs).
(3) Unlock the locking support.
(4) Disconnect the flexible cable (2 locations) between the A-Board and the digital module.
* When disconnecting, pull out the cable straight (at right angle to the coupler).
(5) Cover the digital module with thick cloth for insulation and protection, and lay the A-Board and other PCBs upside down.
(6) Connect the A-Board and the DG-Board with flexible cable.
(7) Connect P2/P3 connectors from the LCD panel (back light) to P1-Board.



SERVICE 1



SERVICE 2



Key Command

SERVICE 1

- Press the **RED/GREEN** button to step up/down through the functions.
- Press the **YELLOW/BLUE** button (or **VOLUME UP/DOWN** button) to change the function values.
- Press the **STR** button after each adjustment has been made to store the required values.

SERVICE 2

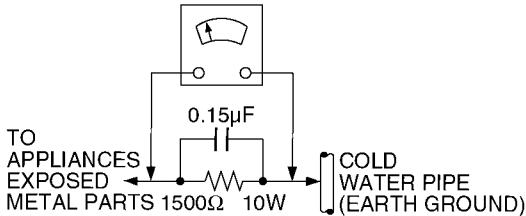
- Press the **RED/GREEN** button to select the Option.
- Press 1 or 2 button to select the bit.
- Press **VOLUME UP/DOWN** button to change the bit, 0 or 1.
- Press the **STR** button after each Option code has been changed to store.

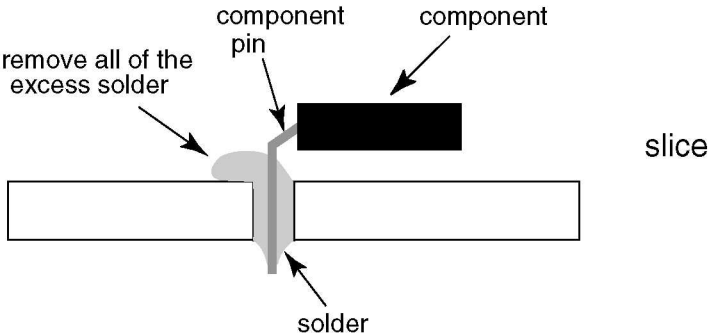
TX-15LT2M/Z		TX-15LT2Q		TX-15LT2X		TX-15LT2T	
OPTION		OPTION		OPTION		OPTION	
OPTION1	CF	OPTION1	CF	OPTION1	CF	OPTION1	CF
OPTION2	FF	OPTION2	FF	OPTION2	FF	OPTION2	FF
OPTION3	10	OPTION3	10	OPTION3	10	OPTION3	10
OPTION4	E2	OPTION4	E2	OPTION4	E2	OPTION4	E2
OPTION5	DE	OPTION5	DE	OPTION5	DE	OPTION5	DE
OPTION6	C1	OPTION6	C1	OPTION6	C1	OPTION6	C1
OPTION7	46	OPTION7	46	OPTION7	46	OPTION7	46
OPTION8	51	OPTION8	D0	OPTION8	51	OPTION8	51
OPTION9	80	OPTION9	80	OPTION9	80	OPTION9	80
OPTION10	89	OPTION10	89	OPTION10	83	OPTION10	85
OPTION11	0A	OPTION11	0A	OPTION11	0A	OPTION11	0A
OPTION12	41	OPTION12	43	OPTION12	41	OPTION12	41
OPTION13	4A	OPTION13	4A	OPTION13	4A	OPTION13	4A

17 Systems		Function
1	PAL B, G, H	Reception of broadcast transmissions and Playback from Video Cassette Type Recorders
2	PAL I	
3	PAL D, K	
4	SECAM B, G	
5	SECAM D, K	
6	SECAM K1	
7	NTSC M (NTSC 3.58 / 4.5 MHz)	
8	NTSC 4.43 / 5.5 NHz	Playback from Special VCR's
9	NTSC 4.43 / 6.0 NHz	
10	NTSC 4.43 / 6.5 NHz	
11	NTSC 3.58 / 5.5 NHz	
12	NTSC 3.58 / 6.0 NHz	
13	NTSC 3.58 / 6.5 NHz	
14	SECAM I	
15	PAL 60 Hz / 5.5 MHz)	Playback from Special Disc Playback and Speciaql VCR's
16	PAL 60 Hz / 6.0 MHz)	
17	PAL 60 Hz / 6.5 MHz)	

Hot-Check Circuit

AC VOLTMETER

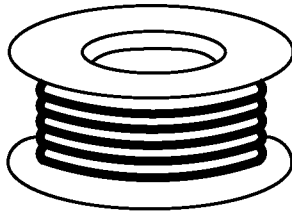
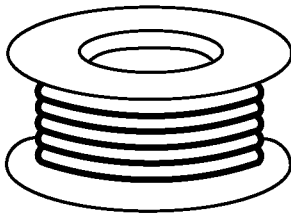
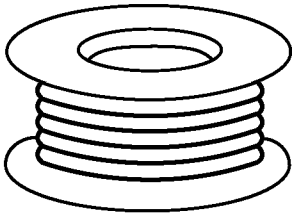


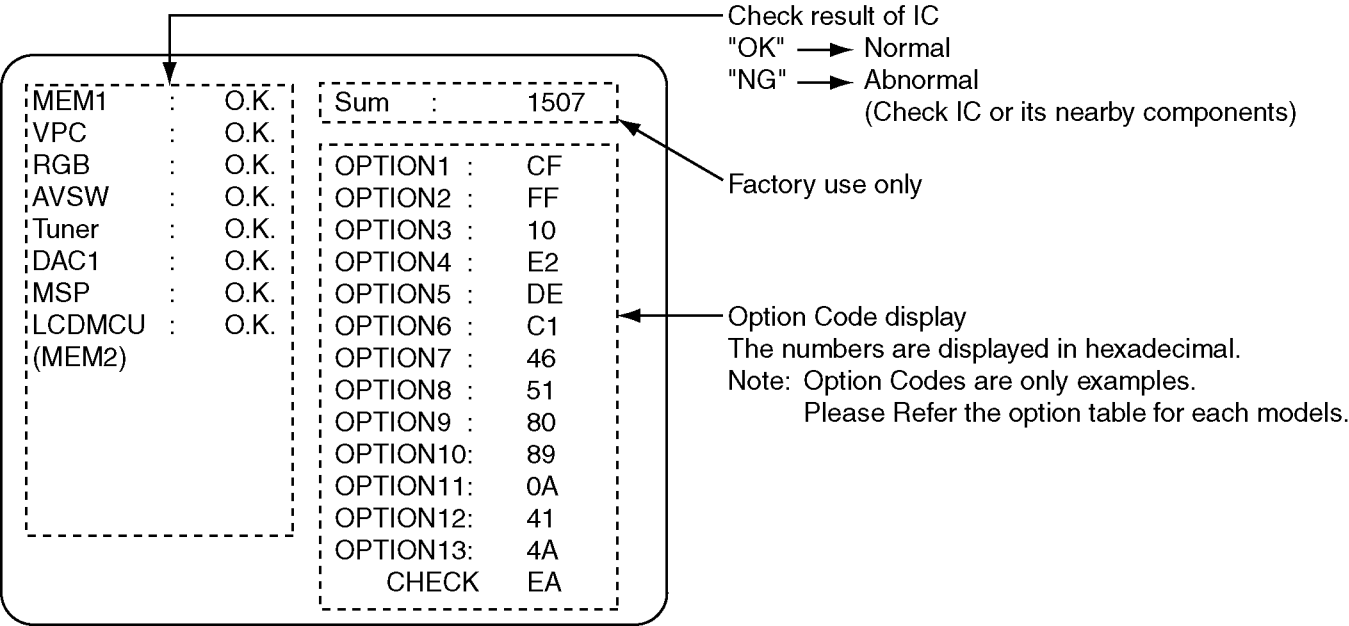


0.3mm X 100g

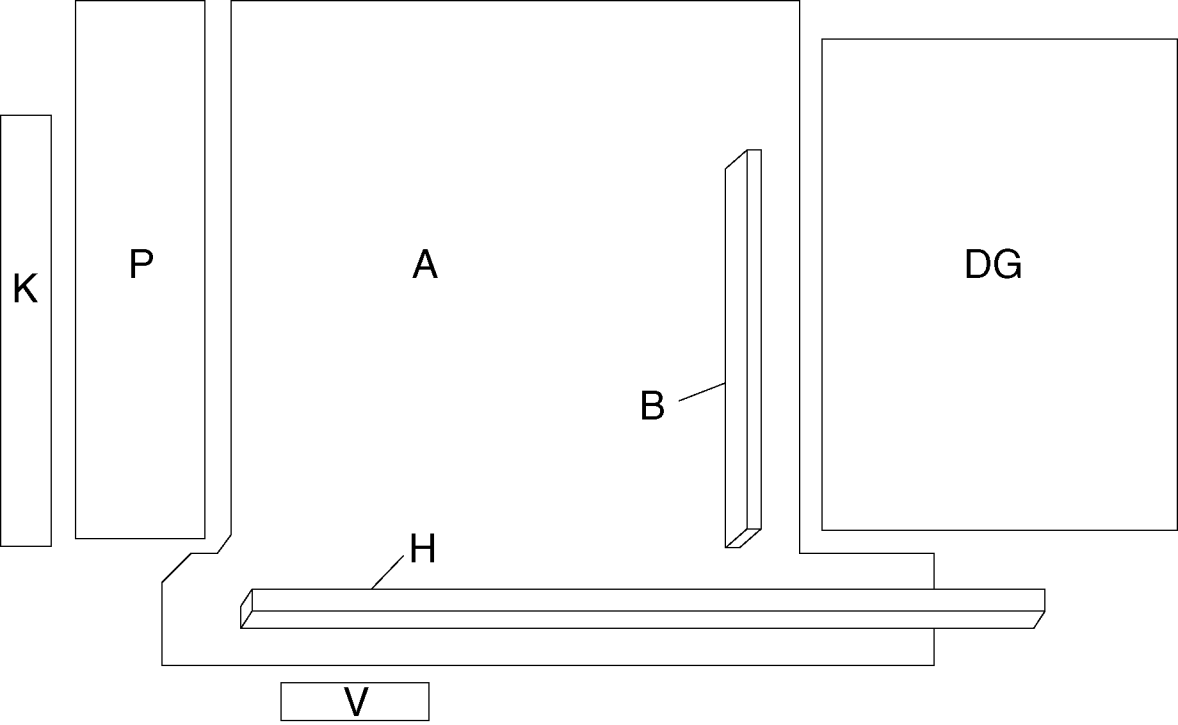
0.6mm X 100g

1.0mm X 100g





Display	Ref. No.	Description	P.C.B.
MEM1	IC1004	EEPROM	DG-Board
VPC	IC9001	Video Processor	DG-Board
RGB	IC9505	RGB Processor	DG-Board
AVSW	IC4002	AV switch	A-Board
Tuner	TNR001	Tuner	B-Board
DAC1	IC4003	D/A Converter	A-Board
MSP	IC2503	Multi Sound Processor	A-Board
LCDMCU	IC3002	LCD MCU	DG-Board



Board Name	Function
A - Board	Main(DC Power Supply,Audio,Micro Processor,Input Select)
B - Board	Tuner
DG - Board	Global Core,VPC,RGB Processor
H - Board	DC Power Jack,AV Connector
K - Board	Switch
P - Board	Inverter
V - Board	Remote Sensor,LED

